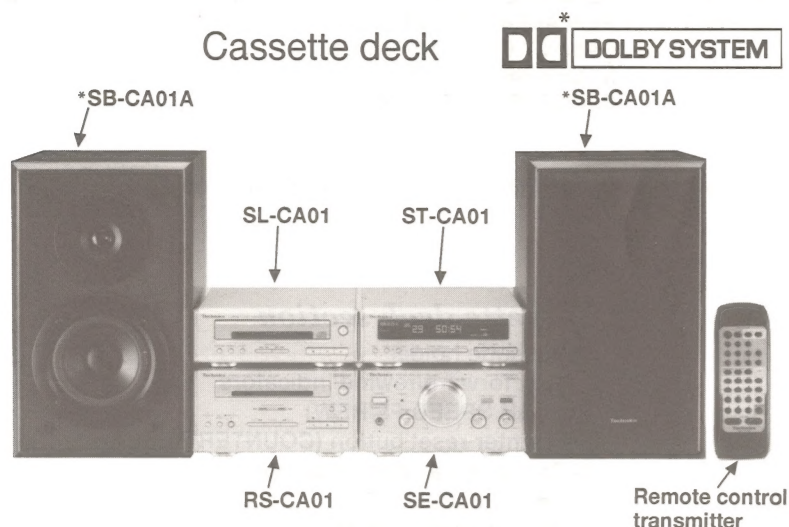


# Service Manual

Cassette Deck

RS-CA01



Colour

(N)...Gold Type

Area

Suffix for Model No.	Area	Colour
(E)	Europe.	(N)

System: SC-CA01

Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.

\* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY", and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

## AR-1 MECHANISM SERIES

### SPECIFICATIONS

Deck system	Stereo cassette deck
Track system	4 track, 2 channel
Recording system	AC bias
Bias frequency	100kHz
Erasing system	AC erase
Heads	
(Recording/ Playback head)	Permalloy head
(Erasing head)	Double gap ferrite head
Motors	
Capstan drive	DC servo motor
Reel table drive	DC motor
Tape speed	4.8 cm/s
Wow and flutter	0.1% (WRMS)
Fast forward and rewind times	Approx. 52 seconds with C-60 cassette tape
Frequency response	
(Dolby NR off)	
TYPE I (Normal)	20Hz - 17kHz (DIN)
TYPE II (High)	20Hz - 17kHz (DIN)
TYPE III (Metal)	20Hz - 17kHz (DIN)

S/N (Signal level=max recording level, High)

NR off

56dB (A weighted)

Dolby NR B on

66dB (A weighted)

Input sensitivity and impedance

REC (IN)

280mV/ 23kΩ

Output voltage and impedance

PLAY (OUT)

280mV/ 220Ω

### General

Dimensions (WxHxD)

186x103x246 mm

Weight

1.6 kg

### Notes:

1. Weight and dimensions shown are approximate.
2. Design and specifications are subject to change without notice.

System	Tuner	CD player	Amplifier	Cassette deck	Speakers
SC-CA01	ST-CA01	SL-CA01	SE-CA01	RS-CA01	* SB-CA01A

\* Made in PAES

### ⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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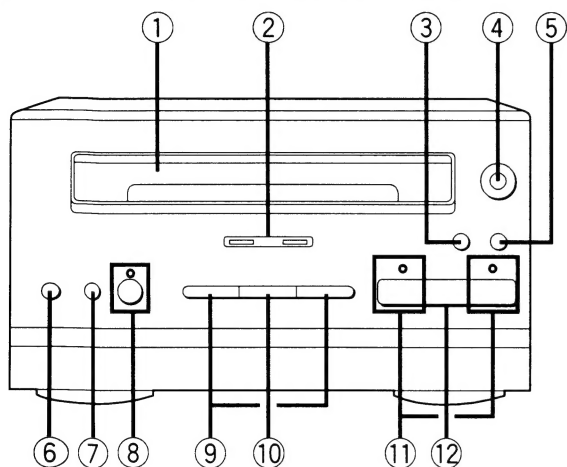
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### NOTE:

Refer to the service manual for Model No. SE-CA01 (ORDER No. AD9603074C2) for information on "ACCESSORIES", "INSTALLATION", "CONNECTIONS" and "PACKAGING".

## FRONT PANEL CONTROL



### Cassette deck section

- ① Cassette holder
- ② Fast forward/rewind indicators (HIGH SPEED FF/REW)
- ③ Counter reset button (COUNTER RESET)
- ④ Cassette tray open/close button (▲ OPEN/CLOSE)
- ⑤ Display button (DISPLAY)
- ⑥ Dolby noise reduction button (DOLBY NR)
- ⑦ Reverse mode select button (REV MODE)
- ⑧ Record pause button and indicator (● REC PAUSE)
- ⑨ Fast forward/rewind/tape program sensor buttons ([TPS] ◀◀, ▶▶ [TPS])
- ⑩ TPS skip button (TPS SKIP)
- ⑪ Playback buttons and indicators (◀, ▶)
- ⑫ Stop button (■)

## LISTENING TO TAPES

### Playback

Type of tape which can be played correctly:  
The unit automatically identifies the type of tape.

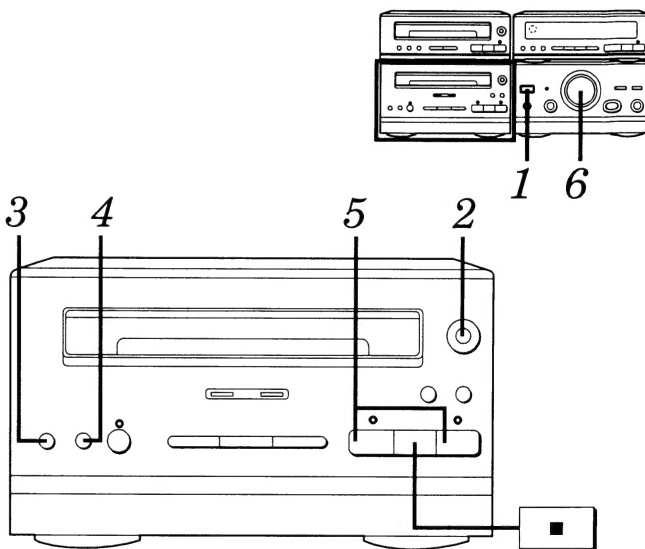
Normal position/TYPE I	○
High position/TYPE II	○
Metal/TYPE IV	○

**1** Switch on the power.

**2** Press ▲ OPEN/CLOSE on deck, and then insert the tape.  
Load a tape with the exposed side facing the cassette holder's insertion part.  
Insert the cassette tape until it touches the back of the compartment.  
Press ▲ OPEN/CLOSE once again to close the cassette holder.

**3** To listen to a tape recorded in Dolby B NR  
Press DOLBY NR and check "□□" is displayed.  
When playing back a tape which was not recorded on Dolby NR system, press DOLBY NR so that indications go off.

**4** Press REV MODE to select the reverse mode.  
Each time you press REV MODE, one of the indicators will appear.  
◀◀ : The deck plays one side only, and then stops automatically.  
◀▶ : The deck plays both sides, and then stops automatically.



◀▶ : The deck plays both sides 8 times, and then stops automatically.

**5** Press ◀ or ▶.  
▶ : The forward side will playback.  
◀ : The reverse side will playback.

**6** Adjust the volume level as you like.

### To stop tape playback:

Press ■.

**Note** Keep your fingers out of the cassette tray so that you do not get pinched when it closes.

## ■ OPERATION CHECKS AND MAIN COMPONENT REPLACEMENT PROCEDURES

### NOTE

1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
3. Select items from the following index when checks or replacement are required.
4. Illustrated screws are equivalent to actual size.
5. Refer the parts No. on the page of "Main Component Replacement Procedures", if necessary.

### ● Contents

#### •Checking Procedure for each P.C.B.

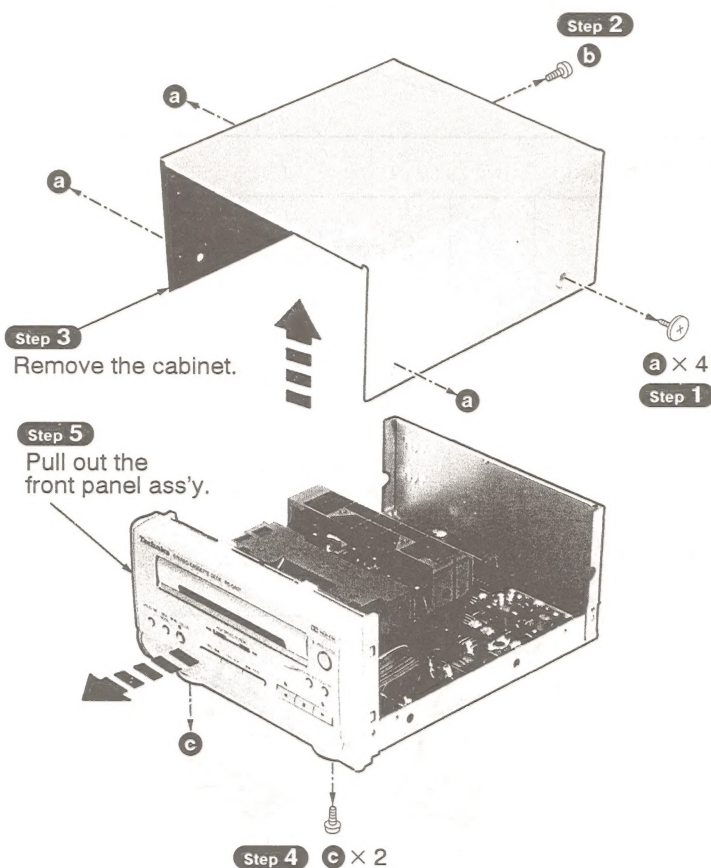
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| 2. Checking for the main P.C.B..      | 4.    |

#### •Main Component Replacement Procedures

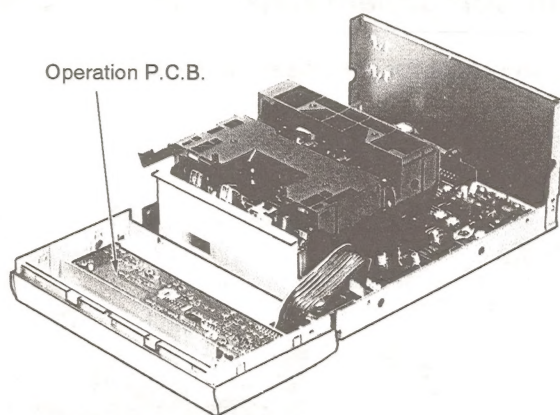
- |  |       |
|--|-------|
| 1. Replacement for the cassette holder ass'y.                          | 4~6.  |
| 2. Replacement for the belt, reel motor ass'y and capstan motor ass'y. | 6~9.  |
| 3. Replacement for the parts mounted on mechanism P.C.B. and solenoid. | 9,10. |
| 4. Replacement for the head block and pinch roller ass'y.              | 10.   |

## ■ Checking Procedure for each P.C.B.

### 1. Checking for the operation P.C.B.



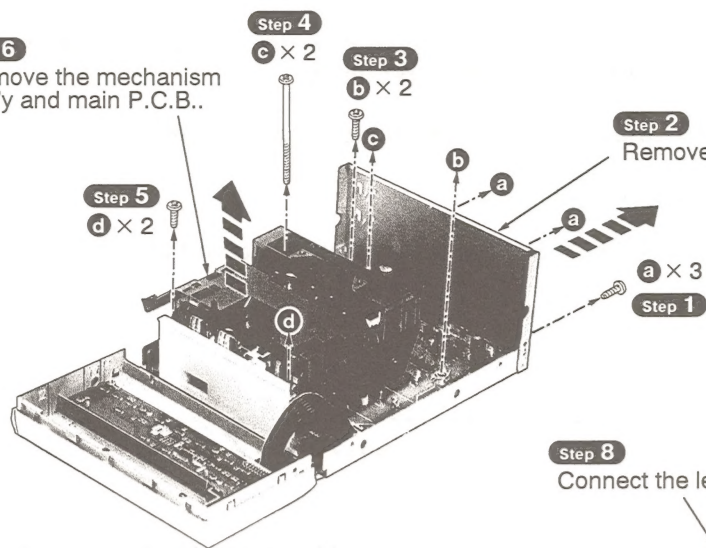
• Check the operation P.C.B. as shown below.



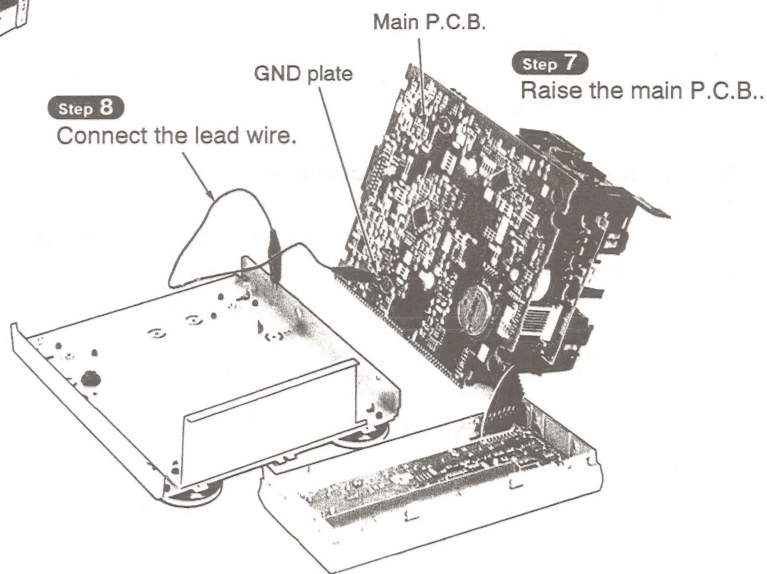
- |  |                     |
|--|---------------------|
|  | <b>a</b> (Silver)   |
|  | [RHD30007-S]        |
|  | <b>b, c</b> (Black) |
|  | [XTBS3+8JFZ1]       |




2. Checking for the main P.C.B.

• Follow the item 1 ( Step 1 ~ Step 5 ) in checking procedures for each P.C.B. on page 3.



• Check the main P.C.B. as shown below.

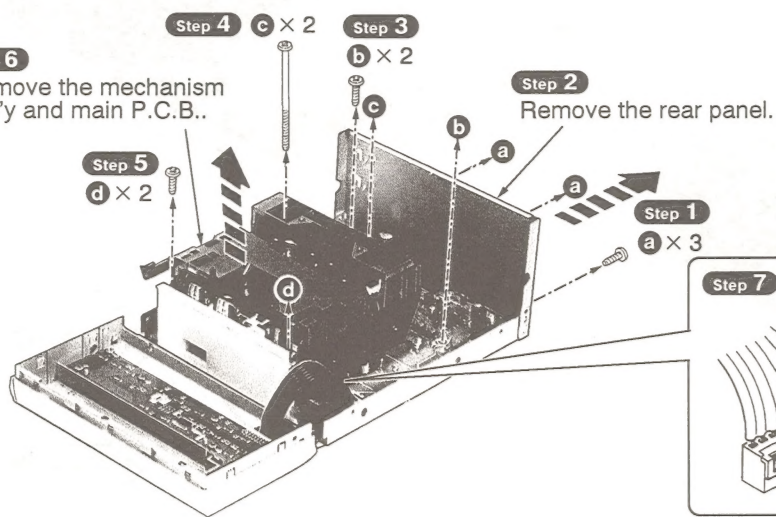





-  **a** (Black)  
[XTBS3+8JFZ1]
-  **b, d** (Black)  
[XTB3+12JFZ]
-  **c**  
[RHD30069] (Black)

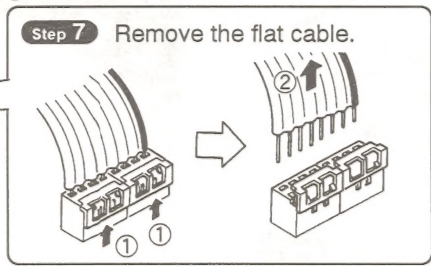
■ Main Component Replacement Procedures

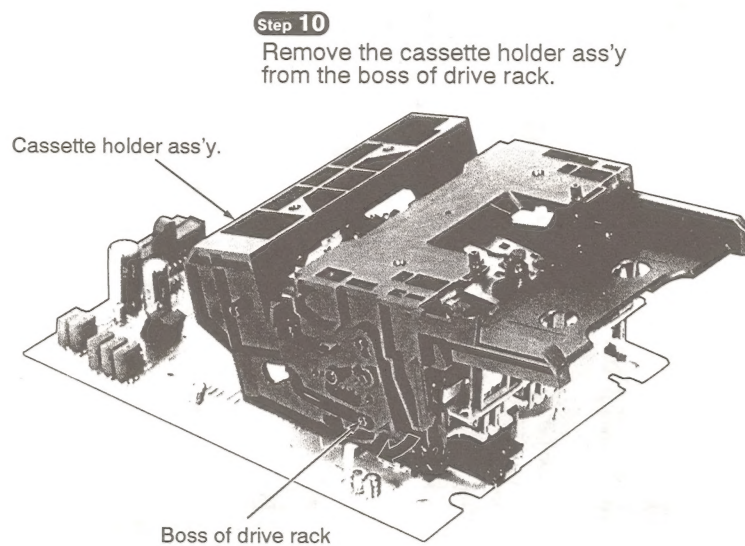
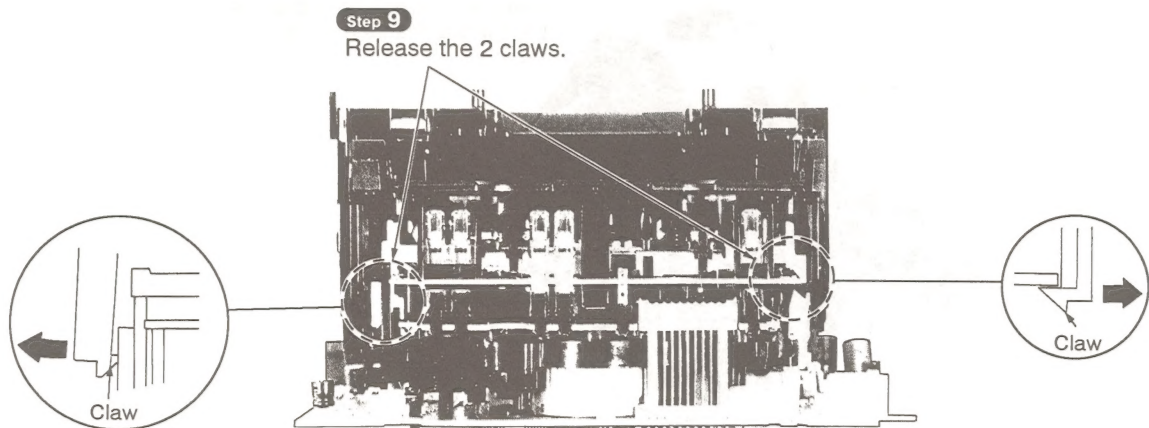
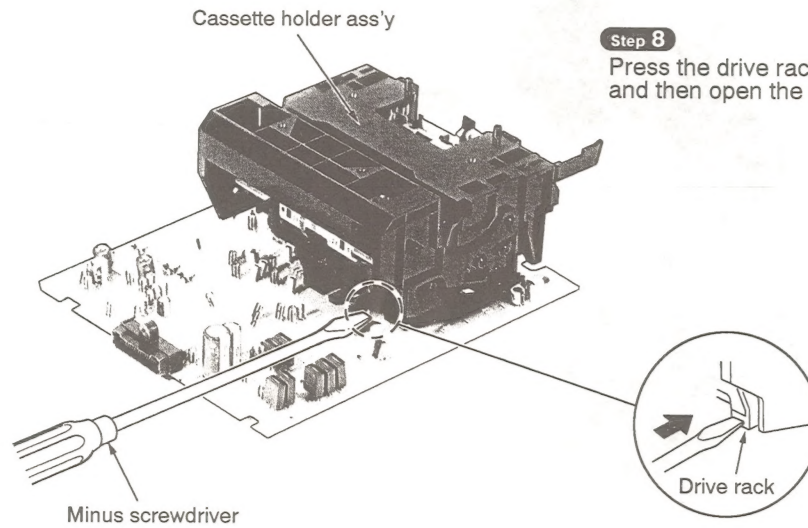
1. Replacement for the cassette holder ass'y

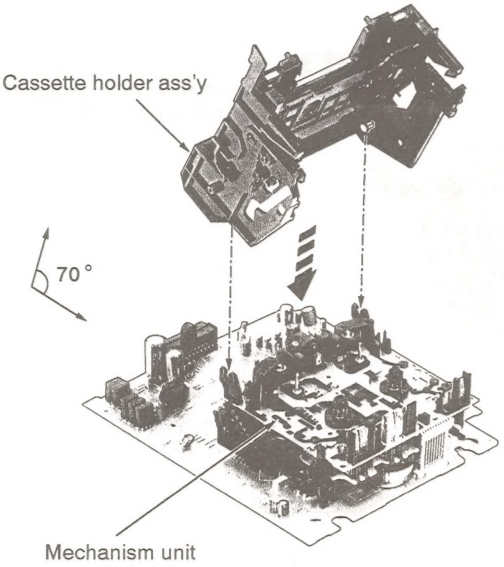
• Follow the item 1 ( Step 1 ~ Step 5 ) in checking procedures for each P.C.B. on page 3.



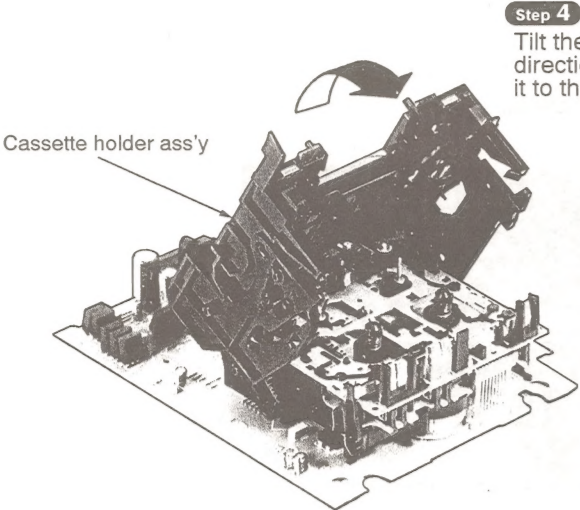
-  **a** (Black)  
[XTBS3+8JFZ1]
-  **b, d** (Black)  
[XTB3+12JFZ]
-  **c**  
[RHD30069] (Black)







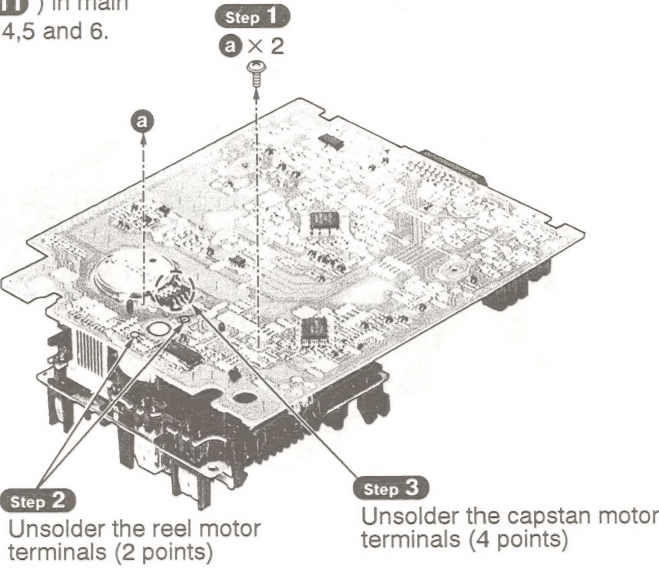
**Step 3**  
Locate the cassette holder ass'y and mechanism unit at a 70 degree angle, and then install the cassette holder ass'y.



**Step 4**  
Tilt the cassette holder ass'y in the direction of arrow, and then secure it to the mechanism ass'y.

**2. Replacement for the belt, reel motor ass'y and capstan motor ass'y**

- Follow the item 1 ( **Step 1** ~ **Step 5** ) in checking procedures for each P.C.B. on page 3.
- Follow the item 1 ( **Step 1** ~ **Step 11** ) in main component procedures on pages 4,5 and 6.



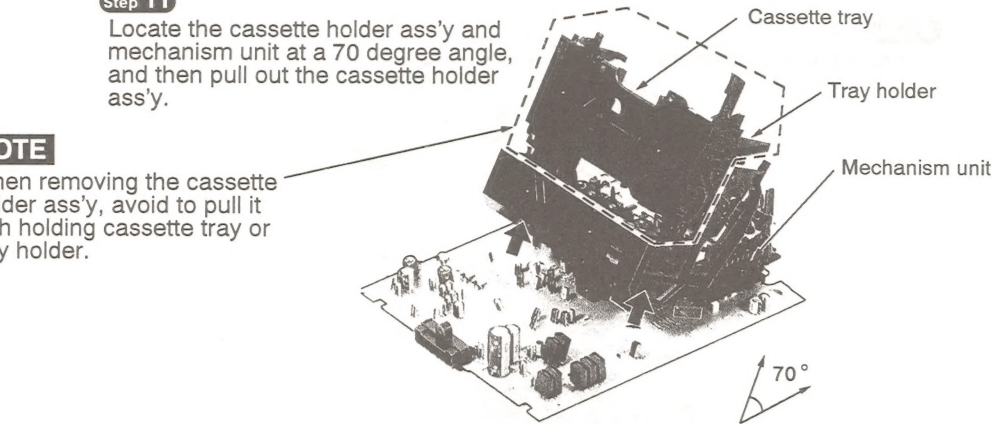
[XTW2+6S]

Step 11

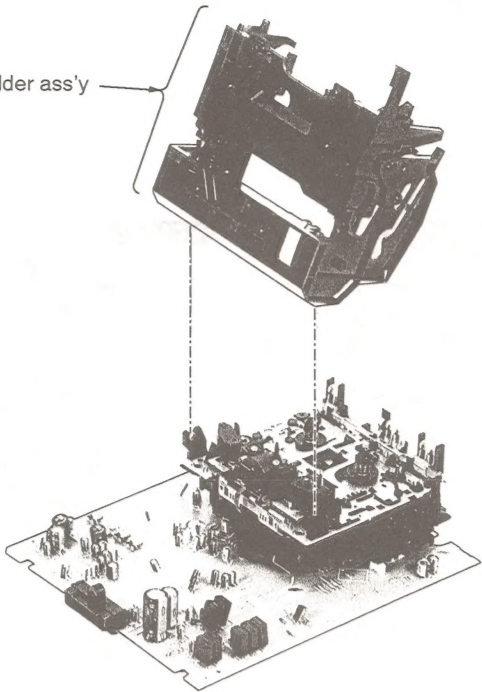
Locate the cassette holder ass'y and mechanism unit at a 70 degree angle, and then pull out the cassette holder ass'y.

NOTE

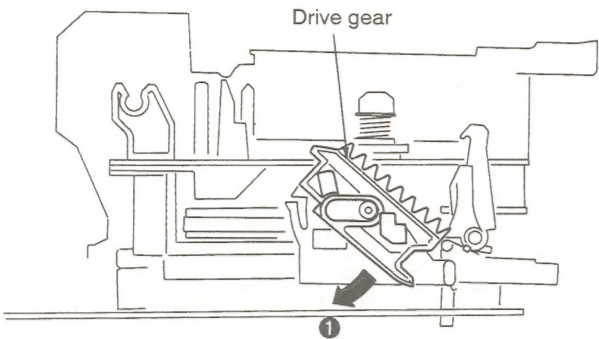
When removing the cassette holder ass'y, avoid to pull it with holding cassette tray or tray holder.



Cassette holder ass'y

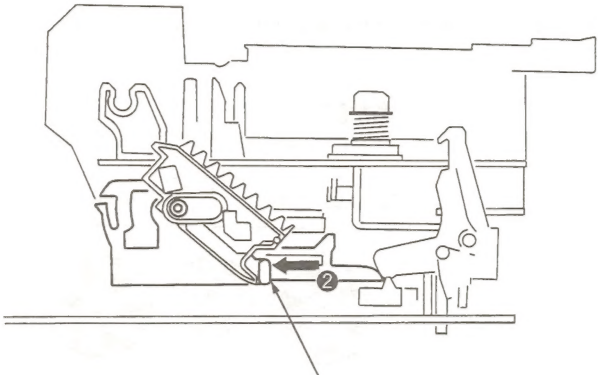


Installation of the cassette holder ass'y after replacement



Step 1

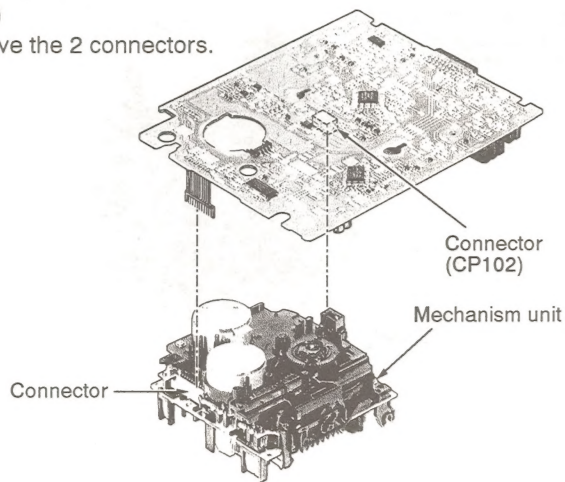
Tilt the drive gear in the direction of arrow ①.



Step 2

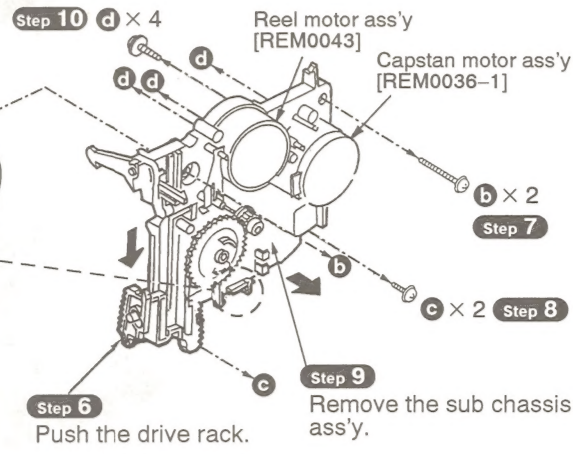
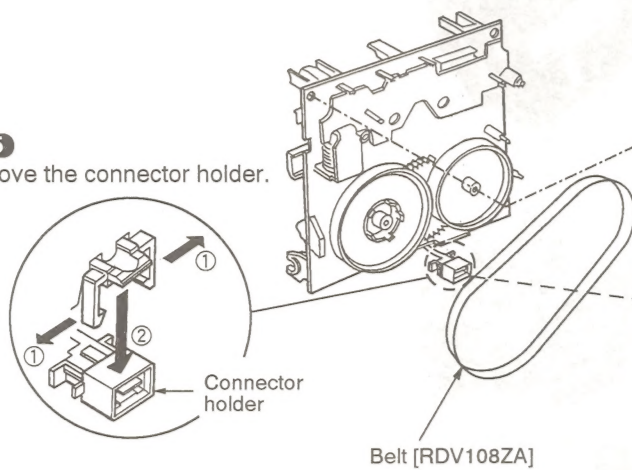
Force the drive rack fully in the direction of arrow ②.

**Step 4**  
Remove the 2 connectors.

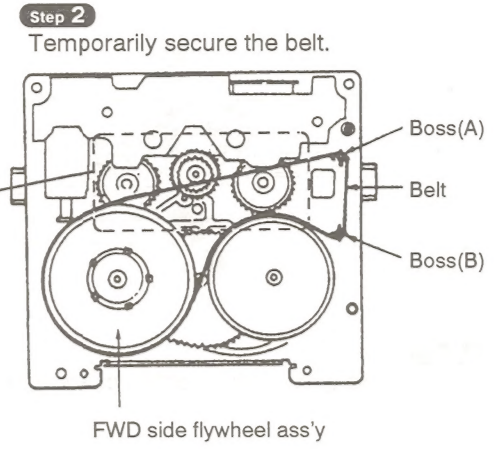
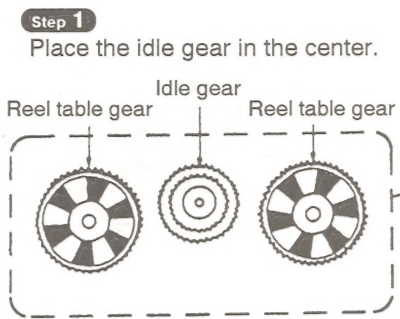


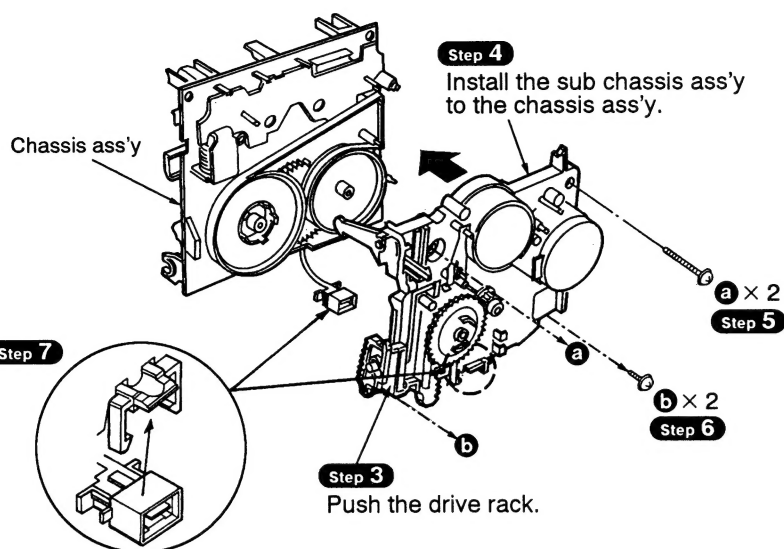
-  **b**  
[XTW26+12S]
-  **c**  
[XTW26+6L]
-  **d**  
[RHD26013]

**Step 5**  
Remove the connector holder.

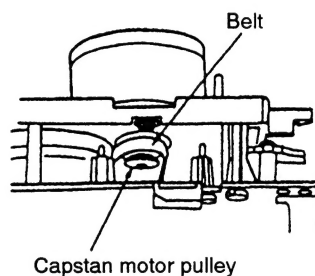
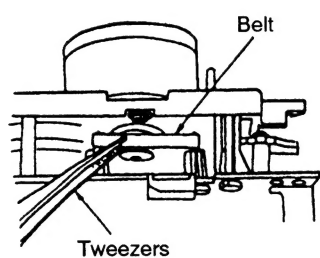


**Installation of the sub chassis ass'y after replacement**



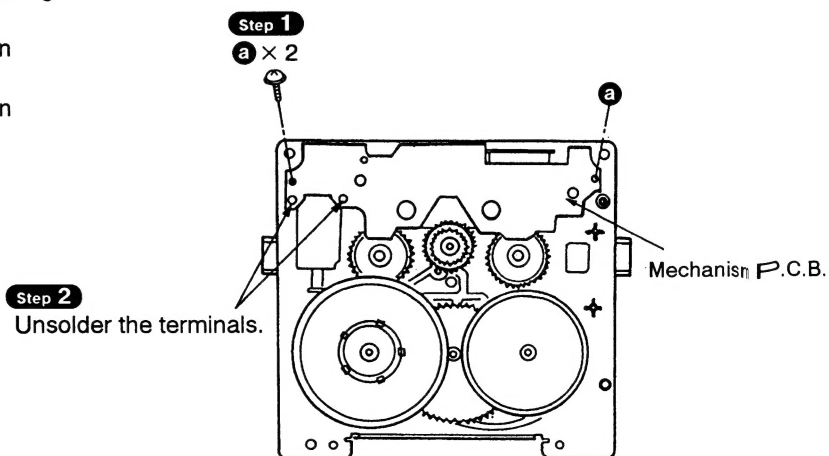


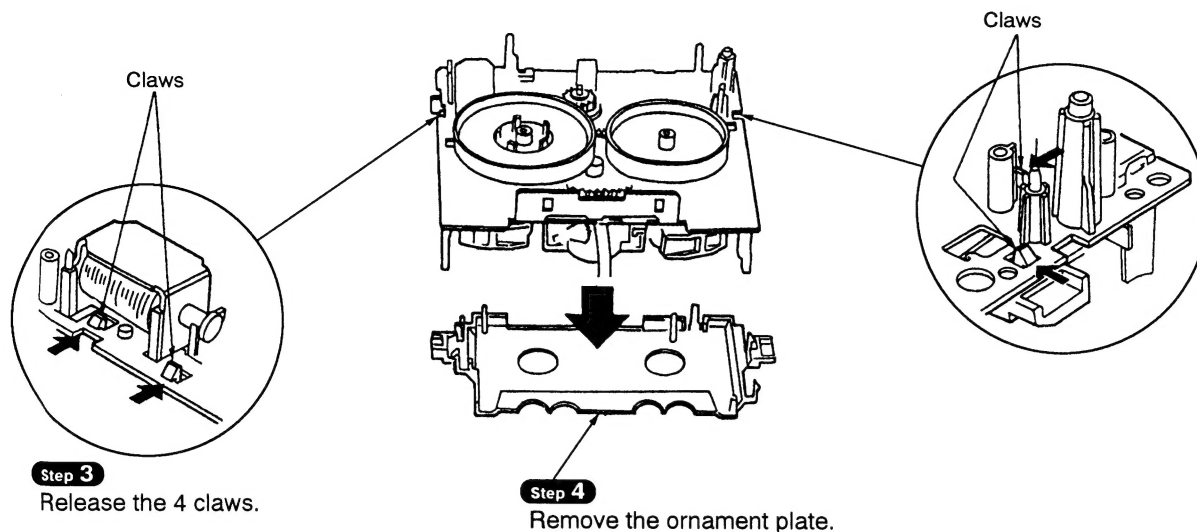
Step 8  
Secure the belt with the capstan motor pulley.



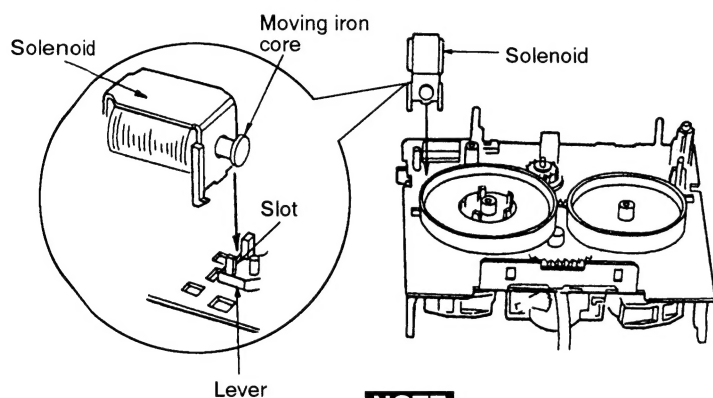
### 3. Replacement for the parts mounted on mechanism P.C.B. and solenoid

- Follow the item 1 ( Step 1 ~ Step 5 ) in checking procedures for each P.C.B. on page 3.
- Follow the item 1 ( Step 1 ~ Step 11 ) in main component procedures on pages 4,5 and 6.
- Follow the item 2 ( Step 1 ~ Step 9 ) in main component procedures on pages 7 and 8.



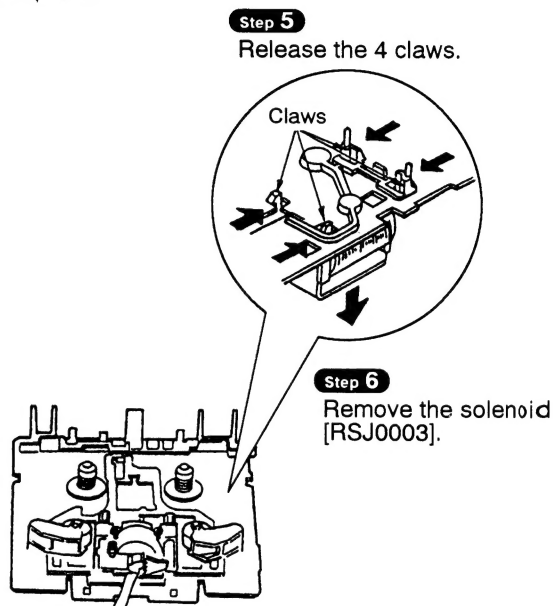


**Notice for installing the solenoid**



**NOTE**

- The moving iron core of solenoid should be aligned with slot of lever.

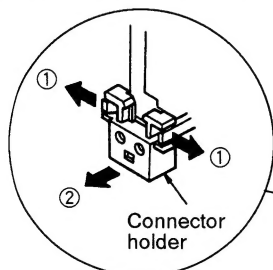


**4. Replacement for the head block and pinch roller ass'y**

- Follow the item 1 ( **Step 1** ~ **Step 5** ) in checking procedures for each P.C.B. on page 3.
- Follow the item 1 ( **Step 1** ~ **Step 11** ) in main component procedures on pages 4,5 and 6.

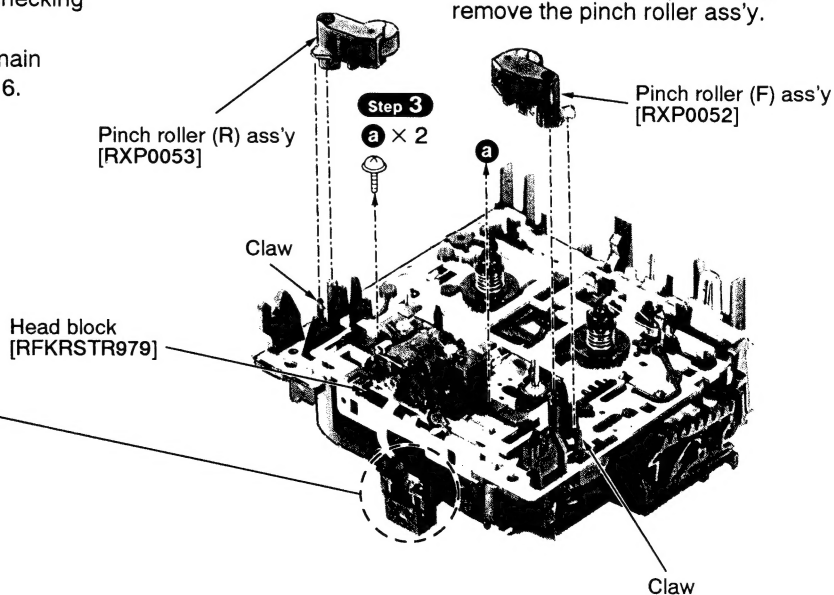
**Step 2**

Remove the connector holder.



**Step 1**

Release the 2 claws, and then remove the pinch roller ass'y.



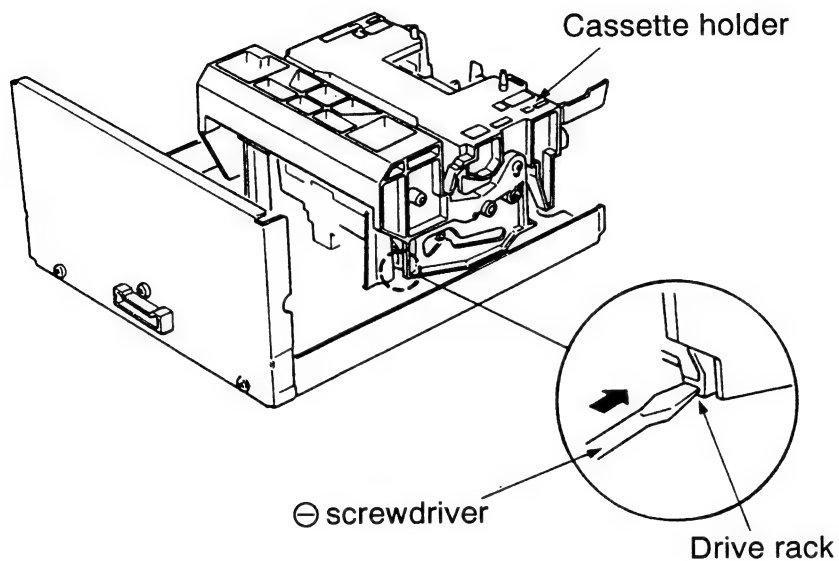
[XTW2+5L]

## ● Manually opening and closing the cassette holder assembly

- Follow the item 1 (Step 1 ~ Step 5) in checking procedures for each P.C.B. on page 3.

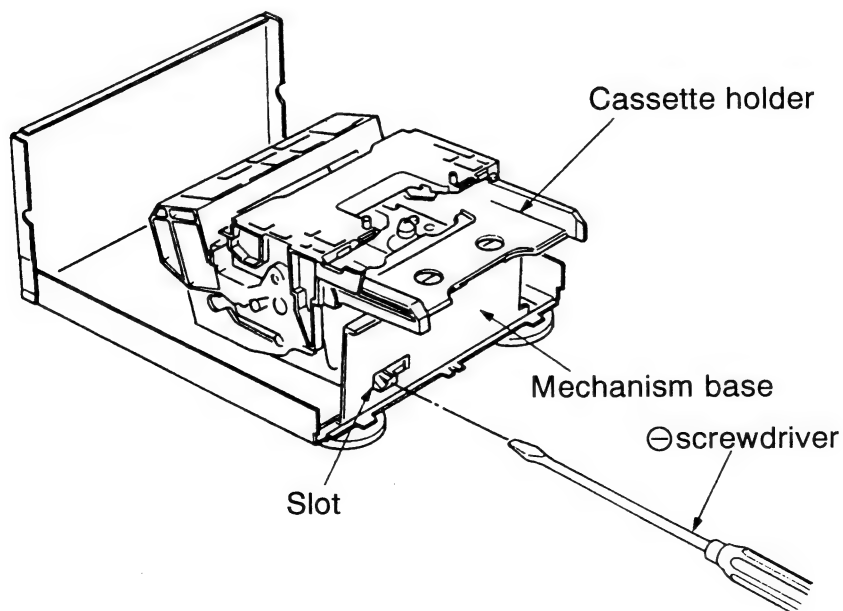
### OPENING

Push the drive rack in the direction of the arrow with a ⊖ screwdriver.



### CLOSING

Push the drive rack back into position by inserting a ⊖ screwdriver into the holes on the P.C.B.



## MEASUREMENTS AND ADJUSTMENTS

This unit RS-CA01 is designed to operate on power supplied from the Amplifier (SE-CA01) through Tuner (ST-CA01). When connecting the unit to other system components, do not connect to the Amplifier (SE-CA01) directly. Be sure to connect this unit through the Tuner (ST-CA01).

When operating the unit RS-CA01 alone for testing and servicing, without having power supplied from the Amplifier (SE-CA01) and Tuner (ST-CA01), use the following method.

### ● To Supply Power Source

1. Short three sections the test points **TP602**, **A. GND**, and **TP702**.
2. Apply 11 AC power to test points between **TP601** and **TP602** (GND), and **TP603** and **TP602** (GND).

**Note:** When operated alone, this unit automatically enter the TEST mode, causing indicators to blink.

### ● To Check Signals

Connect an oscilloscope or a built-in amplifier speaker between line output for Lch (**TP201**) and jumper (J118) **A. GND**, and line out for Rch (**TP202**) and jumper (J118) **A. GND** and check if the signals are outputting from this unit.

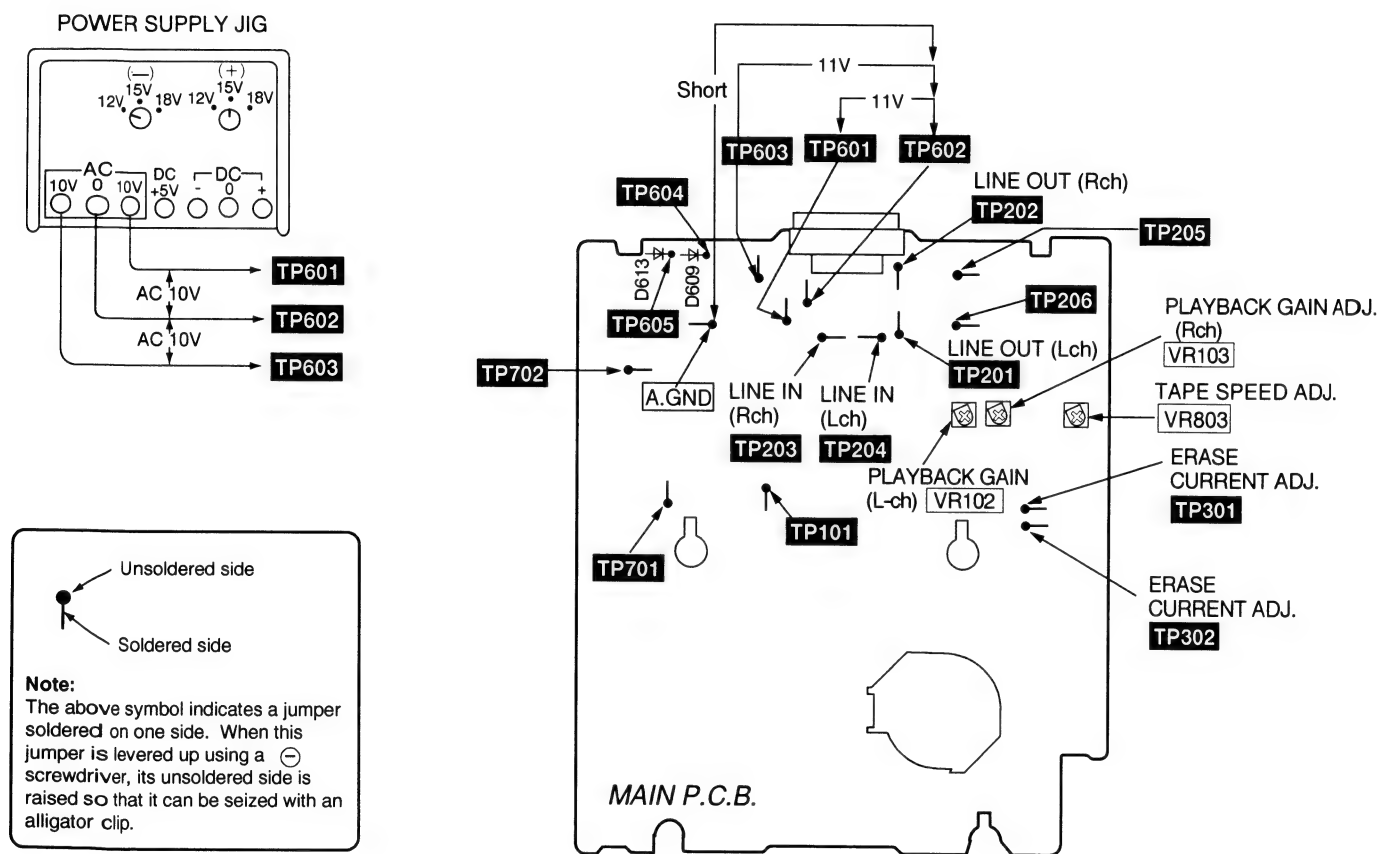


Fig. 1

### Measurement Condition

- Dolby NR switch; OFF
- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature  $20 \pm 5^\circ\text{C}$  ( $68 \pm 9^\circ\text{F}$ )

### Measuring instrument

- EVM (Electronic Voltmeter)
- AF oscillator
- Digital frequency counter

### Test Tape

- Head azimuth adjustment (8kHz, -20dB); QZZCFM
- Tape speed adjustment (3kHz, -10dB); QZZCWAT
- Recording/ playback frequency response adjustment; QZZCFM (315Hz/0dB, 315Hz/-20dB, 12.5kHz~63Hz/-20dB)
- Normal blank tape
- CrO2 blank tape
- Metal blank tape

## HEAD AZIMUTH ADJUSTMENT

1. Connect the measuring instrument as shown in Fig. 2.
2. Replace azimuth screws for both forward and reverse direction after removing the screw-locking bond left on the head base.  
Fine adjustment of azimuth can not be performed with remaining the bond on the head base.  
(Supply part No. of azimuth adjusting screw: **RHD17015**)
3. Playback the azimuth adjustment portion (8kHz, -20dB) of test tape (QZZCFM). Adjust the azimuth adjusting screw until the outputs of the L/R-ch are maximized. (Refer to Fig. 3.)  
Make sure that the difference in the peak level between the left and right channels does not exceed 0.5dB.
4. Perform the same adjustment in reverse playback mode.

### Check of the level difference forward and reverse directions

5. Playback the playback gain adjustment portion (315 Hz, 0dB) of test tape (QZZCFM). Check if level difference between forward and reverse direction is within 1.5 dB.
6. After the adjustment, apply screwlock to the azimuth adjusting screw.



Fig. 2

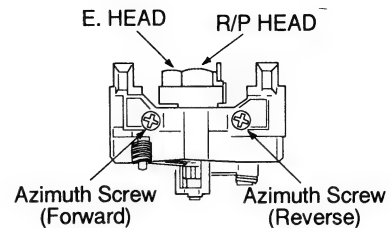


Fig. 3

## TAPE SPEED ADJUSTMENT

**Note:** When connecting the unit to other system components for testing, short the section between the test points **TP701** and **TP702** and turn on the entire system. (The unit is set to the TEST mode, indicators will blink.)

**Normal speed (Standard value: 3000 ± 45Hz)**

1. Connect the measuring instrument as shown in Fig. 4.
2. Playback the middle portion of the test tape (QZZCWAT).
3. Adjust **VR803** for the output value shown below. (Refer to Fig. 1)

**Adjustment target: 3000 ± 15Hz**  
**Standard value: 3000 ± 45Hz**

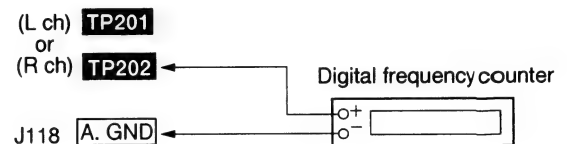


Fig. 4

**Note:** When connecting the unit to other system components, disconnect the short between the test points **TP701** and **TP702**.

## PLAYBACK GAIN ADJUSTMENT

1. Connect the measuring instrument as shown in Fig. 5.
2. Find the start of the 315Hz/0dB section of the test tape (QZZCFM), insert the tape, and play it back (FWD).
3. Adjust **VR102** (Lch) [**VR103** (Rch)] so that the output is within the standard value. (Refer to Fig. 1).

**Standard value: 265mV ± 300mV**

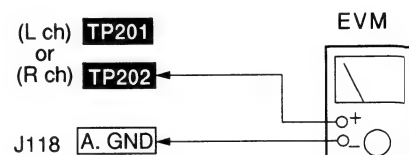


Fig. 5

## ERASE CURRENT CONFIRMATION

1. Connect the measuring instrument as shown in Fig. 6.
2. Insert the blank tape, and press the REC PAUSE button.
3. Check if the output at this time between the erase current confirmation point **TP301** and **TP302** (the output on both edged of R313) is within the standard value.

Standard value	EVM reading
Normal tape : 70 ± 25 mA	(70 ± 25 mA)
CrO <sub>2</sub> tape : 100 ± 25 mA	(100 ± 25 mA)
Metal tape : 160 ± 25 mA	(160 ± 25 mA)

**Note:** The test tape is not required when confirming the erase current.

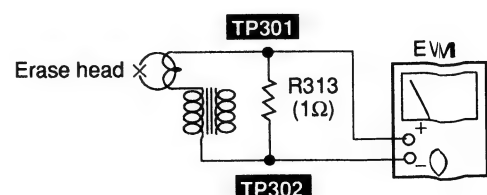


Fig. 6

### Playback frequency response check

1. Connect the measuring instrument as shown in Fig. 7
2. Playback the 315 Hz/–20 dB and 12.5 kHz to 63 Hz/–20 dB sections of the test tape (QZZCFM) and then, using the 315 Hz/–20 dB playback output as a reference (0 dB), confirm that the playback frequency response is within the range shown in Fig. 8.



Fig. 7

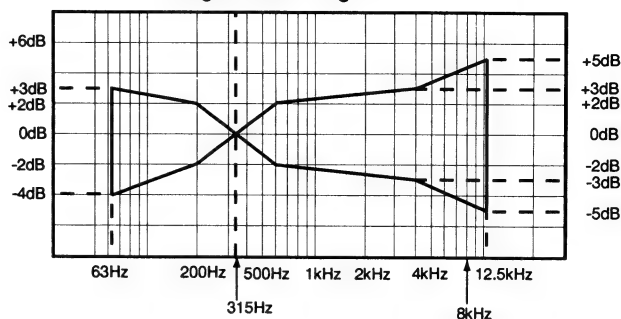


Fig. 8

### Recording/playback frequency response and gain check

#### Normal tape check

1. Connect the measuring instrument as shown in Fig. 9.
2. Insert a Normal-type blank tape.
3. Record signals at 50 Hz, 100Hz, 200 Hz, 500 Hz, 1kHz, 2kHz, 10kHz and 12.5 kHz (28mV).
4. Set the playback frequency of the recorded signals at 1kHz as the reference response (0 dB).
5. Playback the recorded signals to confirm that the output is within the range of the overall frequency response shown in Fig. 10.

#### CrO<sub>2</sub>/ Metal tape check

6. Repeat steps 3 to 5 for each tape and confirm that the output for each is within the range of the overall frequency response shown in Fig. 11.

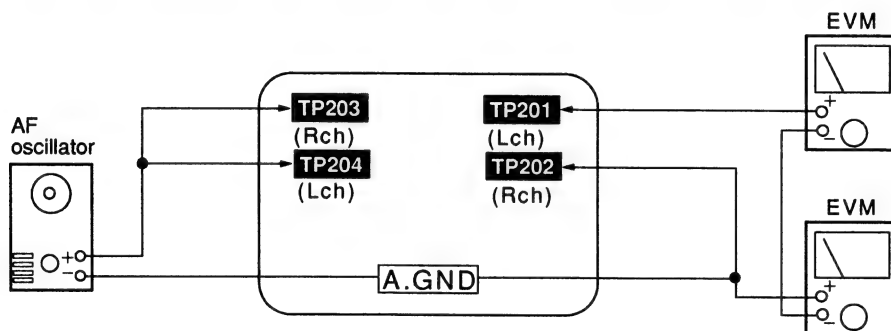


Fig. 9

Normal Overall frequency response chart (NR OUT)

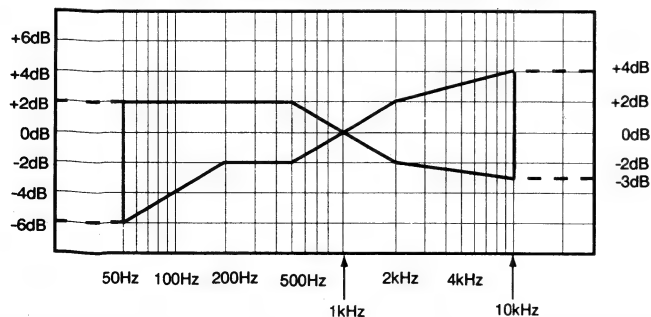


Fig. 10

CrO<sub>2</sub>/ Metal Overall frequency response chart (NR OUT)

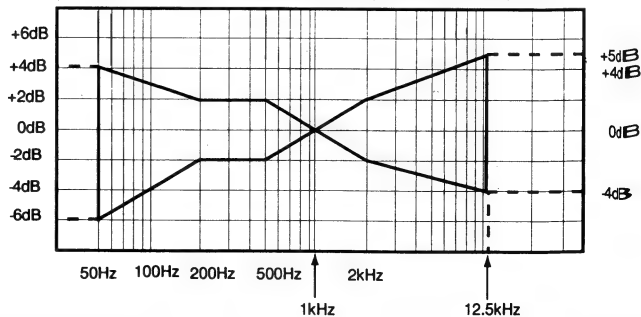


Fig. 11

## ■SERVICE MODE FUNCTION OF CASSETTE MECHANISM

This unit is equipped with a service mode function of cassette mechanism using the LED indicators [R. PLAY (◀), F. PLAY (▶), REW (◀◀), FF(▶▶)]. Use this function during maintenance to check faults of the items below.

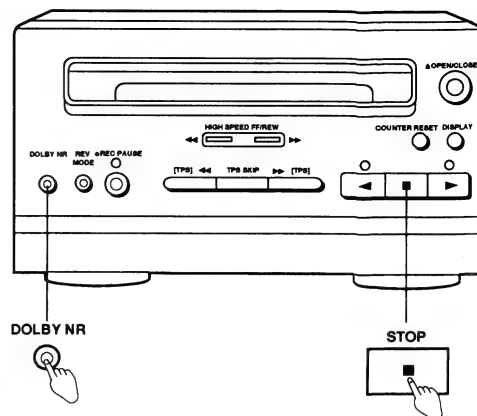
### ● Cassette tapes to be prepared

Metal tape: Recorded music tape with only one erase-prevention tab intact (use middle portion of the tape).

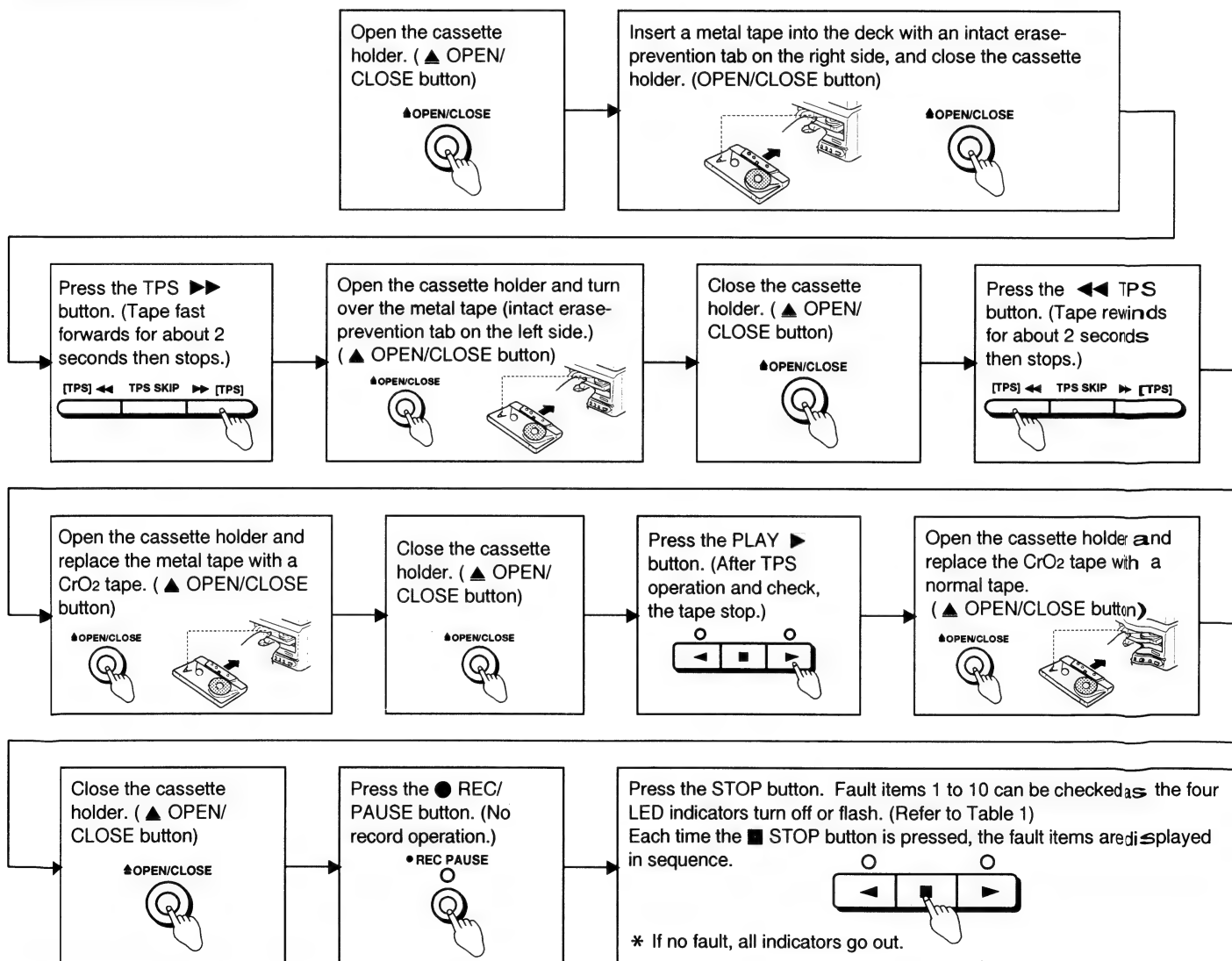
Normal tape: Recorded music tape with both erase-prevention tabs intact (use middle portion of the tape).

### ● Selecting Service Mode

1. Turn on the power to the unit. (If RS-CA01 unit is removed from system, turn it on according to the procedure on page 12.)
2. Check that no tape is inserted in the cassette deck.  
Press the DOLBY NR button for about 2 seconds, and keep pressing it, also press the STOP button for about 2 seconds. (Service mode cannot be selected with a tape inserted in the cassette deck.)
3. The LED indicator for REC PAUSE flashes, the service mode has been activated.

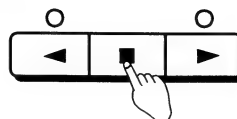


### ● Mechanism Check



### ● Exiting-Self-Check Mode

1. Press the ■ STOP button for more than 5 seconds. (Diagnostic contents stored in memory are erased.)
2. Remove the cassette tape from the cassette holder.
3. Turn off the unit.

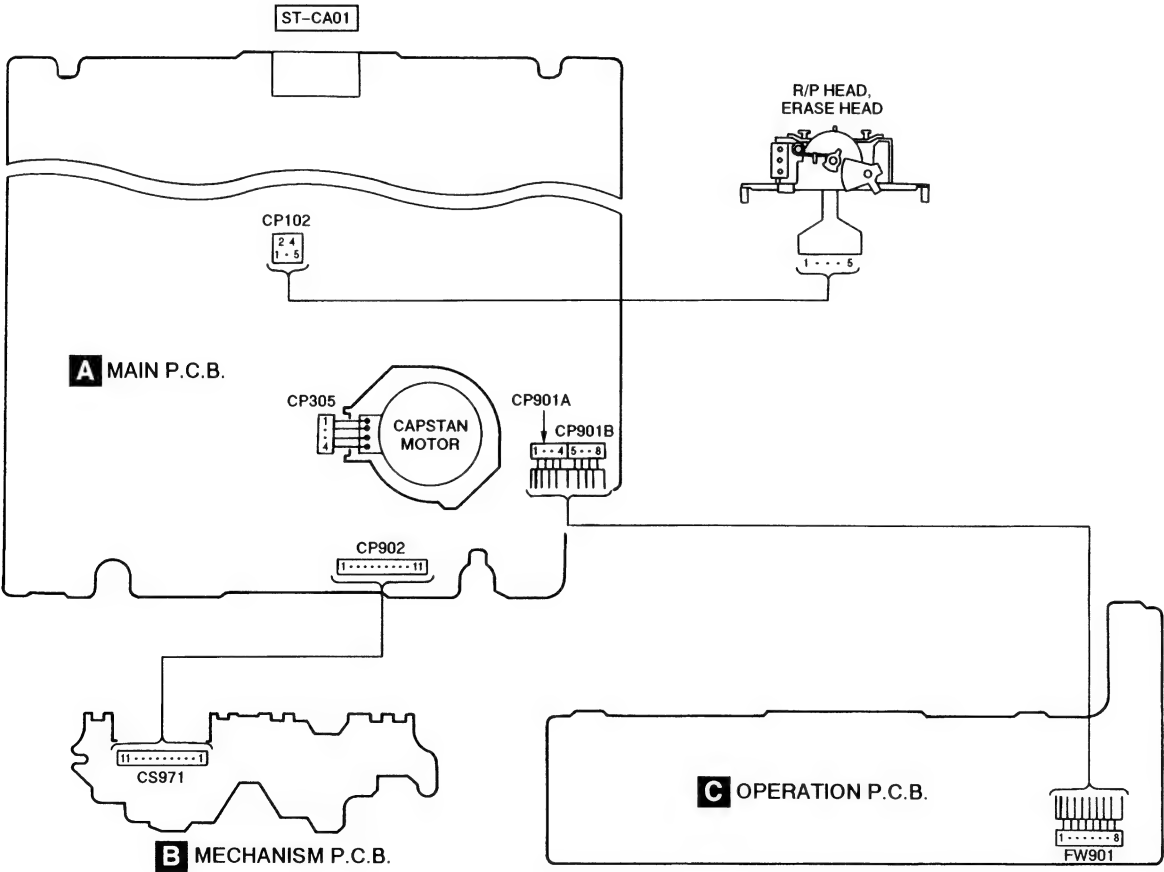


No.	LED indicator status (off/flashing)				Fault location
	◀	▶	◀◀	▶▶	
1.	—	—	—	●	MODE detect switch
2.	—	—	●	—	REC prevention switch
3.	—	—	●	●	Half detect switch
4.	—	●	—	—	Deck OPEN switch
5.	—	●	—	●	Deck CLOSE switch
6.	—	●	●	—	CrO <sub>2</sub> tape detect switch
7.	—	●	●	●	Metal tape detect switch
8.	●	—	—	—	Reel pulse detect system (Hall IC, etc.)
9.	●	—	—	●	TPS operation
10.	●	—	●	—	Reel motor

Table 1: Service Mode Diagnostic Items

**Notes:**  
“●” : Flashing  
“—” : off  
\* If no fault, all indicators go out.

■ WIRING CONNECTION DIAGRAM







## ■ SCHEMATIC DIAGRAM (Parts list on pages 32~35.)

● This schematic diagram may be modified at any time with development of new technology.

	Page
<b>A</b> MAIN CIRCUIT .....	18~20
<b>B</b> MECHANISM CIRCUIT .....	19
<b>C</b> OPERATION CIRCUIT .....	21

### Notes:

- **S803**: Cassette holder open detection switch in "off" position.
  - **S804**: Cassette holder close detection switch in "off" position.
  - **S900**: Stop (□) switch.
  - **S901**: Dolby noise-reduction switch (DOLBY NR).
  - **S902**: Rewind tape program sensor switch (◀◀ [TPS]).
  - **S903**: Reverse-side playback switch (◁).
  - **S904**: TPS skip switch (TPS SKIP).
  - **S905**: Forward-side playback switch (▷).
  - **S906**: Fast forward tape program sensor switch (▶▶ [TPS]).
  - **S909**: Rec pause switch (● REC PAUSE).
  - **S910**: Cassette holder open/ close switch (▲ OPEN/ CLOSE).
  - **S911**: Counter display switch (DISPLAY).
  - **S912**: Counter reset switch (RESET).
  - **S915**: Reverse-mode select switch (REV. MODE).
  - **S971**: Mode switch in "off" position.
  - **S972**: Half switch in "off" position.
  - **S973**: ATS (CrO<sub>2</sub>) switch in "off" position.
  - **S974**: Reverse rec. inhibit switch in "off" position.
  - **S975**: Forward rec. inhibit switch in "off" position.
  - **S976**: ATS (Metal) switch in "off" position.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.  
1K=1,000 (Ω), 1M=1,000 (Ω)
- Capacity are in micro-farads (μF) unless specified otherwise.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.  
( ).....Voltage values at record mode.  
For measurement us EVM.
- Voltage values and waveforms are measured as indicated in the schematic diagram when test points between **TP604** and **TP605**, and between **A. GND** and **TP602** are shorted.
- Important safety notice:  
Components identified by ⚠ mark have special characteristics important for safety.  
When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.
-  : Positive voltage line
  -  : Negative voltage line
  -  : Playback signal line
  -  : Recording signal line

### ● Caution!

IC and LSI are sensitive to static electricity.

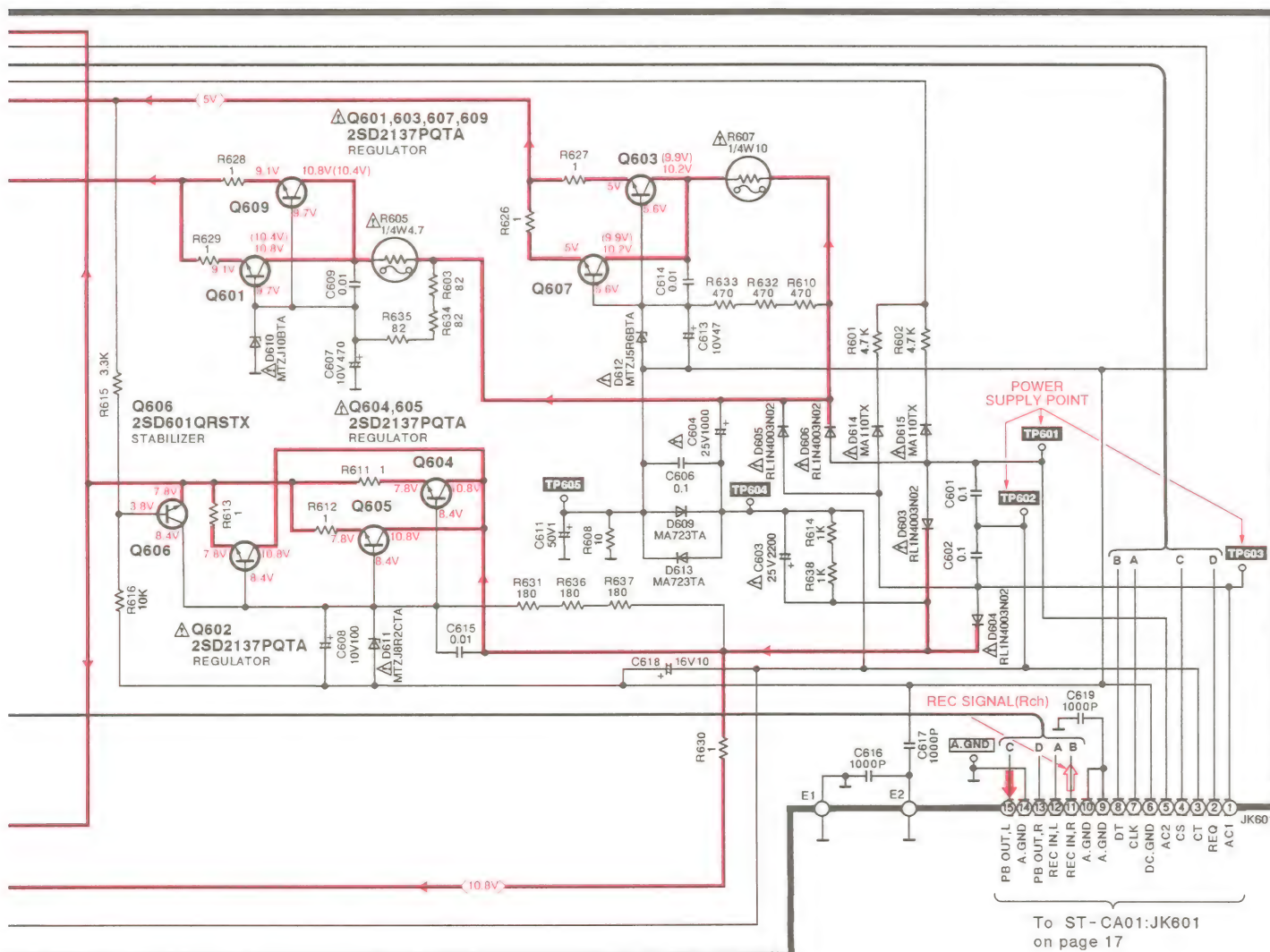
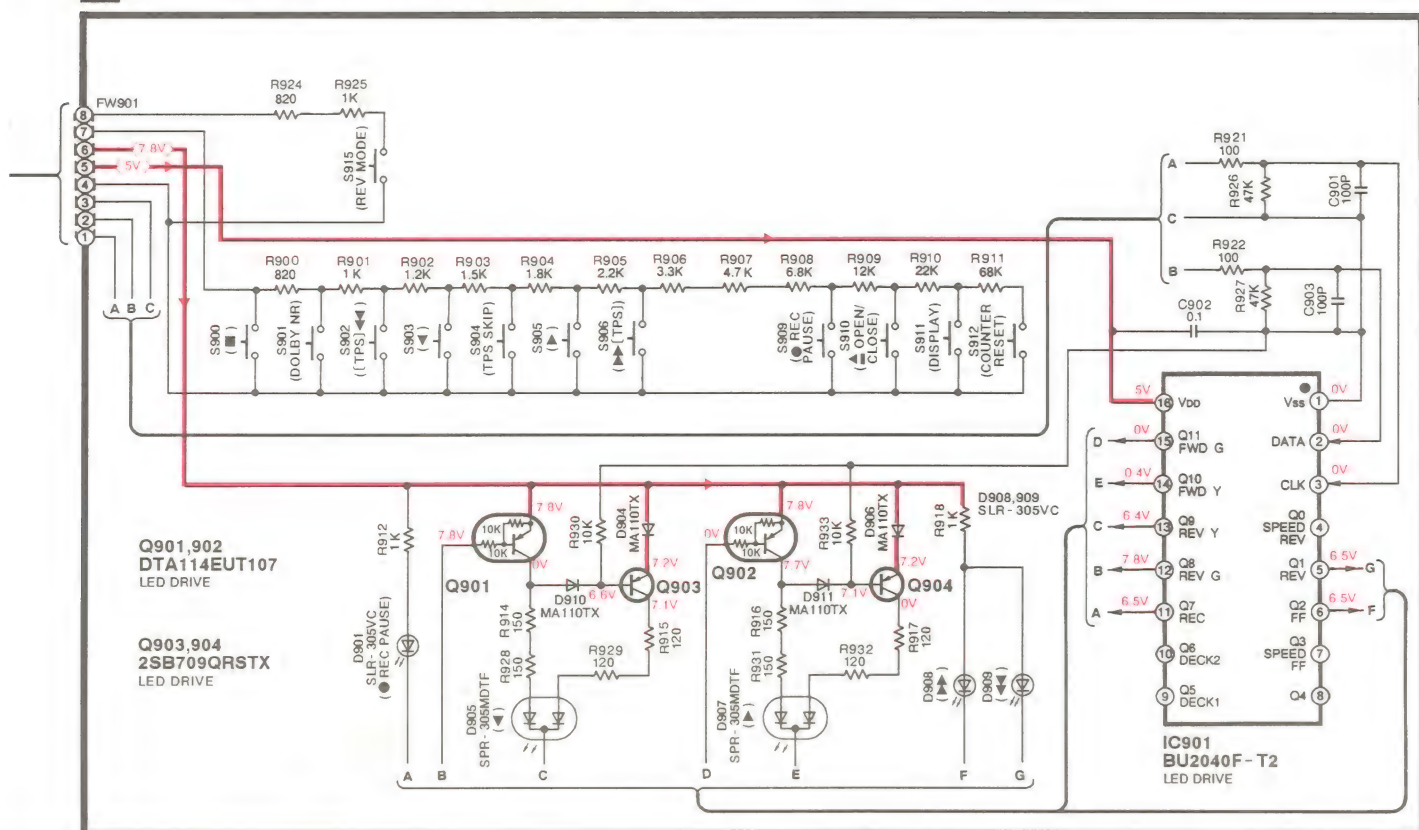
Secondary trouble can be prevented by taking care during repair.

- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering Iron.
- Put a conductive mat on the work table.
- Do not touch the legs of IC or LSI with the fingers directly.





**C** OPERATION CIRCUIT (P.C.Board: on page 22)



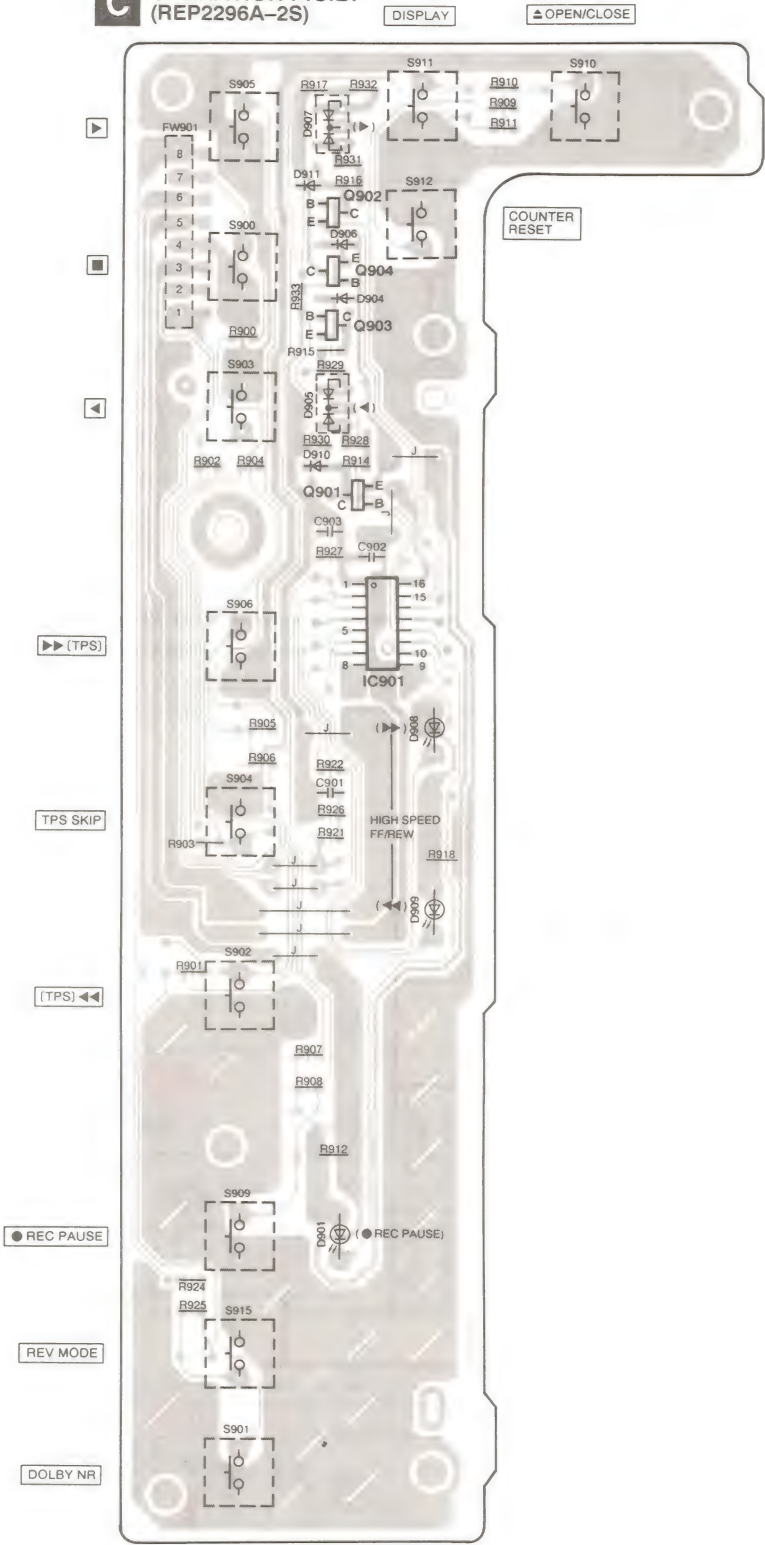
1 2 3 4 5

A  
B  
C  
D  
E  
F

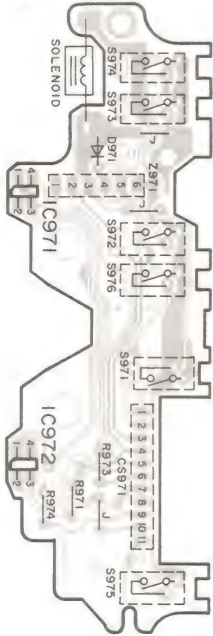
PRINTED CIRCUIT BOARD DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

C OPERATION P.C.B.  
(REP2296A-2S)



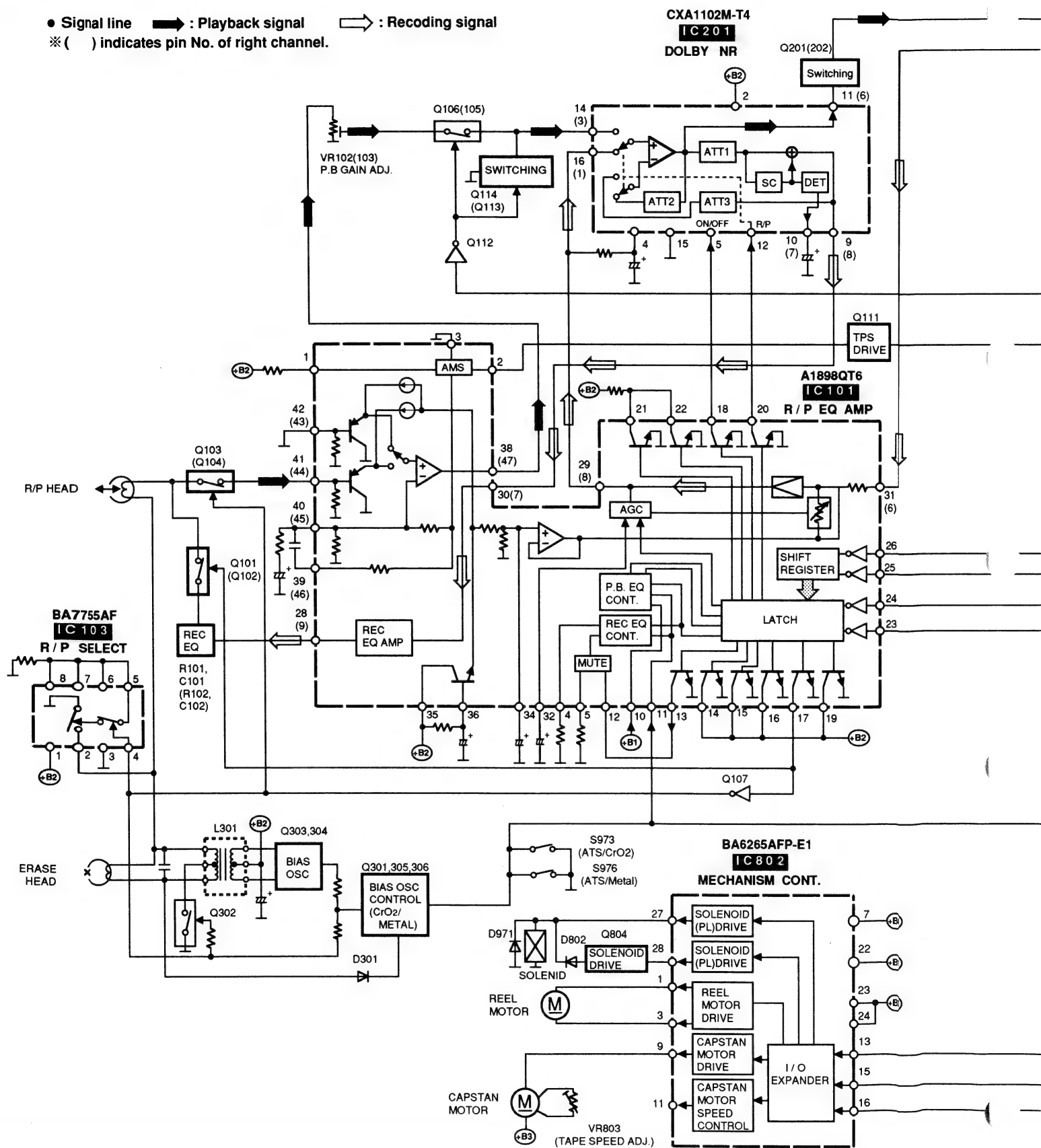
B MECHANISM P.C.B.  
(REP1656A)

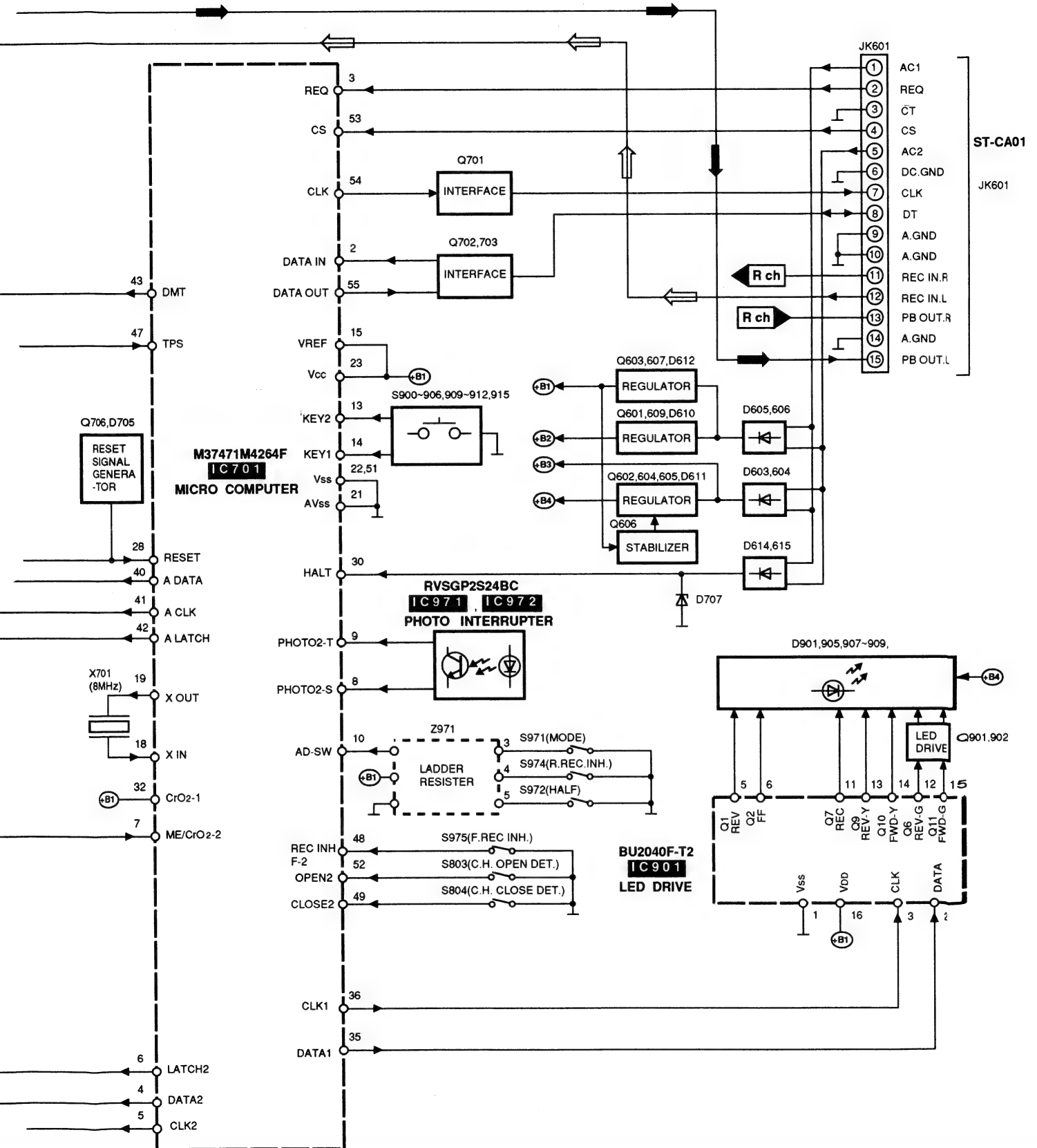




# BLOCK DIAGRAM

- Signal line    ➡ : Playback signal    ➡ : Recoding signal  
 ※ ( ) indicates pin No. of right channel.





# ■ TERMINAL GUIDE

## ● IC701 (M37471M4264F): MICRO COMPUTER

Pin No.	Mark	I/O	Function
1	NC	—	Not used
2	DATA IN	I	Serial data input
3	REQ	I	Request signal input
4	DATA2	O	Mechanism control data output
5	CLK2	O	Mechanism control clock output
6	LATCH2	O	Mechanism control latch signal output
7	ME/CrO2-2	I	Tape select switch input
8	PHOT02_S	I	Reverse side reel pulse input
9	PHOT02_T	I	Forward side reel pulse input
10	AD_SW	I	Mechanism switch signal input
11	PHOT01_S	I	Reverse side reel pulse input
12	PHOT02_T	I	Forward side reel pulse input
13	KEY2	I	Key switch signal input
14	KEY1	I	
15	VREF	I	Reference voltage input
16	NC	—	Not used
17	NC	—	Not used
18	XIN	I	Clock input
19	XOUT	O	Clock output
20	NC	—	Not used
21	AVSS	—	Connect to GND
22	VSS	—	Connect to GND
23	VCC	—	Power supply (+5V)
24	NC	—	Not used
25	TEST	I	Test mode select (Not used, open)
26	CP_SEL1	—	Not used
27	NC	—	Not used
28	RESET	I	Reset signal input

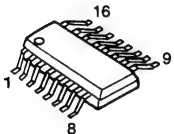
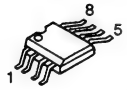
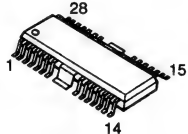
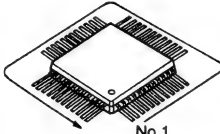
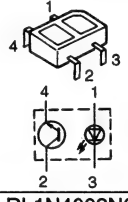
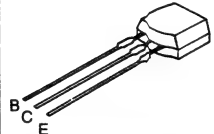
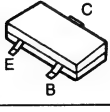
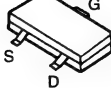
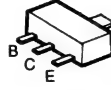
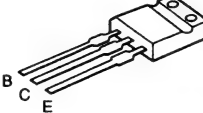
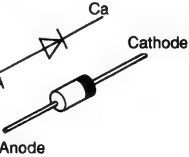
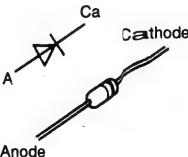
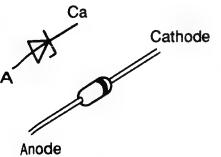
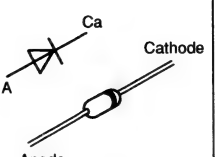
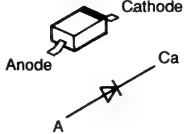
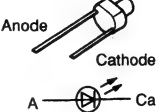
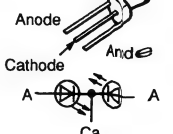
Pin No.	Mark	I/O	Function
29	NC	—	Not used
30	HALT	I	AC power source detect signal input
31	MODE1	I	Mode detect switch signal input
32	CrO2-1	I	Tape select switch signal input
33	HALF1	I	Half detect switch signal input
34	NC	—	Not used
35	DATA1	O	Control data output
36	CLK1	O	Control clock output
37	LATCH1	O	Mechanism control latch signal output
38	CLOSE1	I	Cassette holder close detect switch signal input
39	OPEN1	I	Cassette holder open detect switch signal input
40	A DATA	O	Serial data output
41	A CLK	O	Serial clock output
42	A LATCH	O	Latch signal output
43	DMT	O	Muting control signal output
44	NC	—	Not used
45	NC	—	Not used
46	CP_SEL2	—	Not used
47	TPS	I	TPS signal input
48	RECINH F_2	I	Record prevention tab detect switch signal input
49	CLOSE2	I	Cassette holder close detect switch signal input
50	NC	—	Not used
51	VSS	—	GND terminal
52	OPEN2	I	Cassette holder open detect switch signal input
53	CS	I	Serial data control signal input
54	CLK	O	Serial clock output
55	DATA OUT	O	Serial data output
56	NC	—	Not used

● IC802 (BA6265AFP-E1): MECHANISM CONTROL

Pin No.	Mark	I/O	Function
1	RM(-)	O	Reel motor drive (-) output terminal
2	RNF	-	GND terminal
3	RM(+)	O	Reel motor drive (+) output terminal
4	NC	-	Not used, connected to GND
5	NC		
6	NC		
7	VCC2	I	Power supply terminal
8	CPM GND	-	GND terminal
9	CPM	O	Capstan motor drive output terminal
10	NC	-	Not used, connected to pin11
11	CPM SW	O	Capstan speed select SW output terminal
12	NC	-	Not used, connected to pin 11
13	LATCH	I	I/O expander latch signal input terminal
14	S0	O	I/O expander serial output terminal

Pin No.	Mark	I/O	Function
15	DATA	I	I/O expander data signal input terminal
16	CLK	I	I/O expander clock signal input terminal
17	NC	-	Not used, connected to GND
18	NC	-	
19	NC	-	Not used, connected to pin 9
20	GND	-	GND terminal
21	GND	-	GND terminal
22	VCC1	I	Power supply terminal
23	VCC3	I	Power supply terminal
24	VCC3	I	Power supply terminal
25	NC	-	Not used, connected to power supply
26	GND	-	Gnd terminal
27	PL 15V	O	Plunger output terminal(15V)
28	PL 7.5V	O	Plunger output terminal(7.5V)

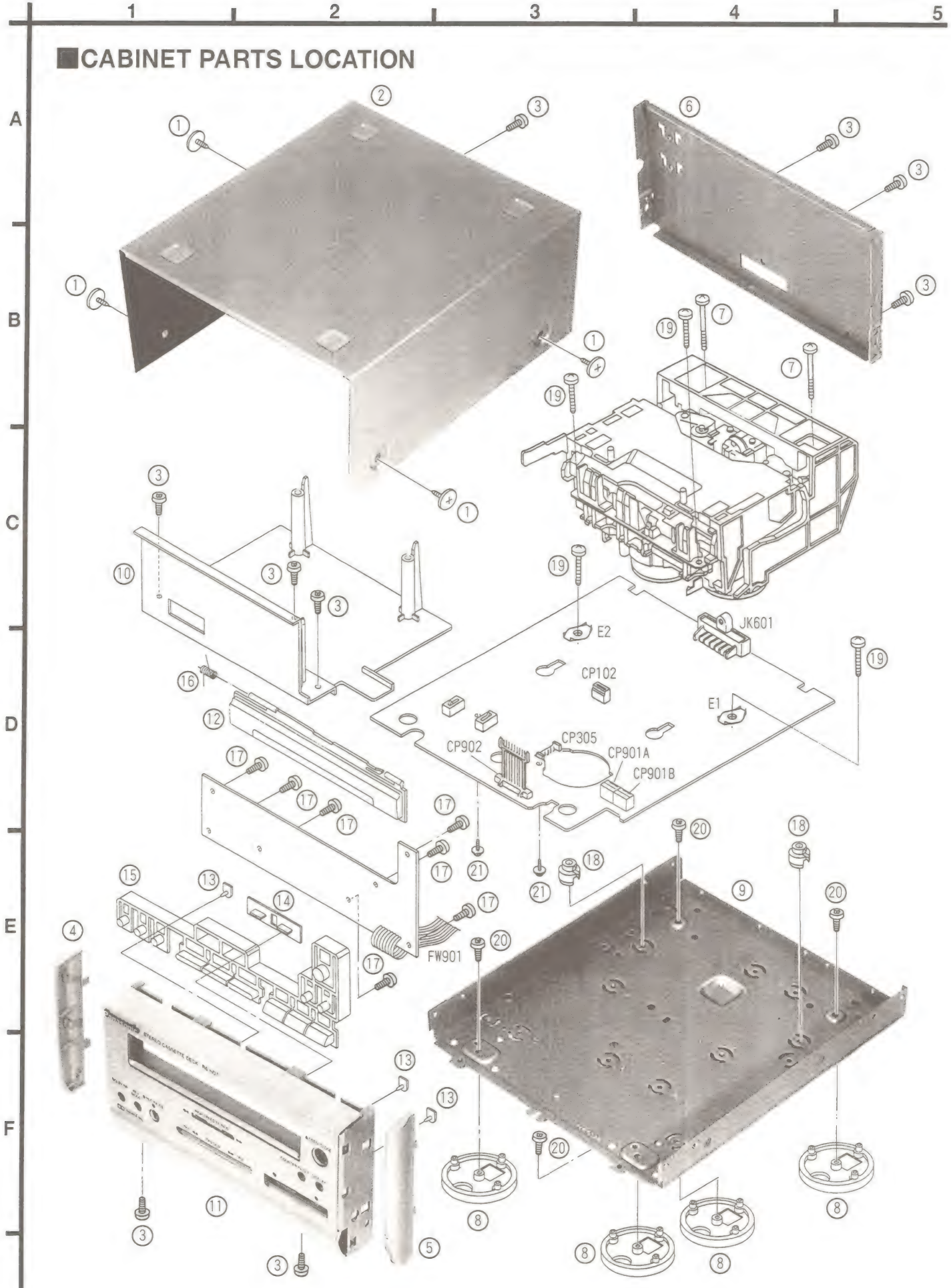
● Terminal guide of IC's, transistors and diodes

CXA1102M-T4 BU2040F-T2 	BA7755AF 	BA6265AFP-E1 	A1898QT6 48PIN M37471M4264F 56PIN 	RVSGP2S24BC 	DTA114EU1O7 DTC144EU1O7 
2SB709QRSTX 2SD1328RSTTX 2SD601QRSTX UN5214TX 	2SJ163PQRTX 	2SD874QRSTX 	2SD2137PQTA 	RL1N4003N02 	MA188TA 
MTZJ10BTA MTZJ5R1BTA MTZJ5R6BTA MTZJ8R2CTA 	MA723TA RVD1SS133TA 	MA110TX 	SLR-305VC 	SPR-305MCTF 	

# REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS		220	RXG0036	REEL TABLE GEAR	
				221	RXL0106	IDLER GEAR	
				222	RXP0052	PINCH ROLLER(F) ASS'Y	
1	RHD30007-S	SCREW		222-1	RMB0259	PINCH ROLLER(F) SPRING	
2	RKM0326B-S	CABINET		223	RXP0053	PINCH ROLLER(R) ASS'Y	
3	XTBS3+8JFZ1	SCREW		223-1	RMB0260	PINCH ROLLER(R) SPRING	
4	RGK0812-S	SIDE ORNAMENT(L)		224	RDG0206A-1	LOADING GEAR	
5	RGK0813-S	SIDE ORNAMENT(R)		225	RDG0209A	INTERMEDIATE GEAR	
6	RGR0240A-C	BACK PLATE		226	REMD036-1	CAPSTAN MOTOR ASS'Y	
7	RHD30069	SCREW		227	REMD043	REEL MOTOR ASS'Y	
8	RKA0076-N1	FOOT		228	RHD26013	SCREW	
9	RMK0324	BOTTOM CHASSIS		229	RMQ0537	DRIVE GEAR	
10	RMK0321	MECHANISM BASE		230	RMQ0314A	SPACER	
11	RFKGSAD01E-N	FRONT PANEL ASS'Y		231	RXG0037	FRICTION GEAR ASS'Y	
12	RFKRSHD7-N	CASSETTE DOOR ASS'Y		232	RMQ0536	DRIVE RACK	
13	RGL0331-Q2	PANEL LIGHT (A)		233	RYF0334A-K	CASSETTE HOLDER ASS'Y	
14	RGL0332-Q1	PANEL LIGHT (B)		233-1	RMC0310	CASSETTE HOLD SPRING	
15	RGU1391-S	OPERATION BUTTON		233-2	RMB0397	HOLDER SPRING	
16	RMB0478	CASSETTE DOOR SPRING		234	RFKJSCA7NB	MAIN CHASSIS ASS'Y	
17	XTBS26+8J	SCREW		235	RFKJSCA7NA	SUB CHASSIS ASS'Y	
18	SHE170-2	P. C. B. SUPPORT		236	XTW26+6L	SCREW	
19	XTB3+12JFZ	SCREW		237	RMB0268	HOLDER HOOK SPRING	
20	XTB3+6G	SCREW		238	RML0271A	HOLDER HOOK LEVER	
21	XTW2+6S	SCREW		239	XTW2+6S	SCREW	
		MECHANISM PARTS		240	RXR0018	REEL TABLE	
				241	XTW2+5L	SCREW	
				242	XTW26+12S	SCREW	
201	RXF0045	FLYWHEEL (F) ASS'Y					
201-1	RMQ0420	WASHER					
202	RXF0046	FLYWHEEL (R) ASS'Y					
202-1	RMQ0421	WASHER					
203	RML0272	SWITCH LEVER					
204	RXQ0265	HEAD P. C. B. ASS'Y					
204-1	RMB0266-1	FWD/REV ROD SPRING					
204-2	RXMD036	FWD/REV ROD					
206	RFKRSTR979	HEAD BLOCK ASS'Y (REC/P. B.)					
206-1	RHD17015	AZIMUTH SCREW					
206-2	RMB0352-1	HEAD HOLD SPRING					
206-3	RMQ0360A	CONNECTOR HOLDER					
207	RDV1082A	BELT					
208	RDK0019A-1J	MAIN GEAR					
209	RMB0261	HEAD P. C. B. RETURN SPRING					
210	RMB0262	BRAKE ROD RETURN SPRING					
211	RMB0263	SPRING (F)					
212	RMB0264	SPRING (R)					
213	RJW1472A	TRIGGER LEVER SPRING					
214	RML0267A	TRIGGER LEVER					
215	RML0268A	FWD/REV LEVER					
216	RMM0091A	BRAKE ROD					
217	RMS0398-1	MOVING IRON CORE					
218	RSJ0003	SOLENOID					
219	RUS6092C	CASSETTE HOLD SPRING					

CABINET PARTS LOCATION



1

2

3

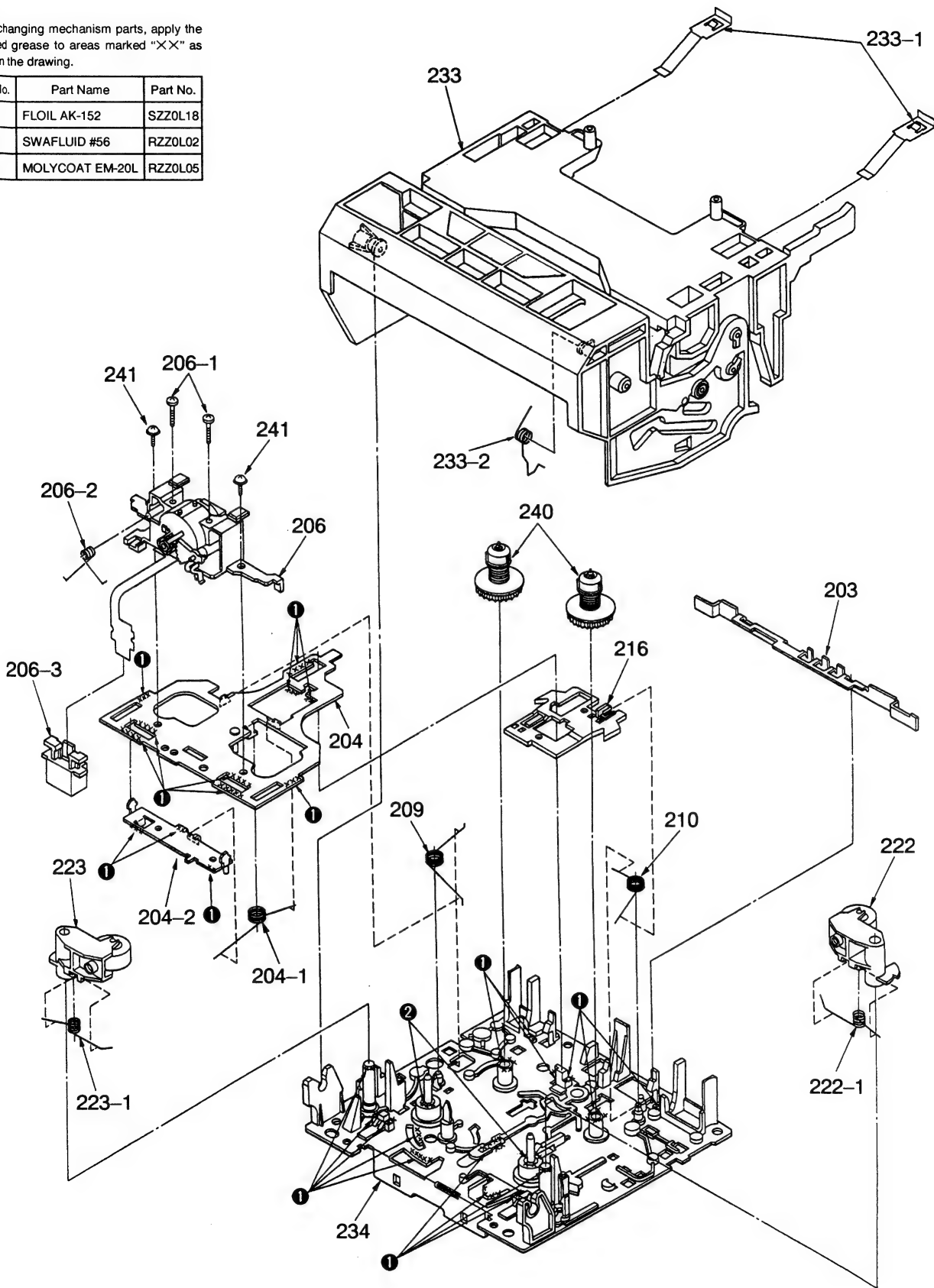
4

5

MECHANISM PARTS LOCATION

**Note:**  
When changing mechanism parts, apply the specified grease to areas marked "X" as shown in the drawing.

Ref. No.	Part Name	Part No.
❶	FLOIL AK-152	SZZ0L18
❷	SWAFLUID #56	RZZ0L02
❸	MOLYCOAT EM-20L	RZZ0L05





# RESISTORS AND CAPACITORS

**Notes:** • Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)  
• Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM)

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
		RESISTORS	R301	ERJ6GEYJ103V	1/10W 10K	R750	ERJ6GEYJ103V	1/10W 10K
			R302	ERJ6GEYJ182V	1/10W 1.8K	R751	ERJ6GEYJ104V	1/10W 100K
			R303	ERJ6GEYJ682V	1/10W 6.8K	R806, 807	ERJ6GEYJ103V	1/10W 10K
R101, 102	ERJ6GEYJ682V	1/10W 6.8K	R304	ERJ6GEYJ223V	1/10W 22K	R808	ERJ6GEYJ392V	1/10W 3.9K
R103, 104	ERJ6GEYJ104V	1/10W 100K	R305	ERJ6GEYJ123V	1/10W 12K	R810	ERJ6GEYJ103V	1/10W 10K
R105, 106	ERJ6GEYJ102V	1/10W 1K	R306	ERJ6GEYJ223V	1/10W 22K	R811-813	ERJ6GEYJ272V	1/10W 2.7K
R107, 108	ERJ6GEYJ820V	1/10W 82	R307	ERDS1FVJ2R2T	1/2W 2.2 $\Delta$	R820	ERDS2TJ2R2T	1/4W 2.2
R110	ERJ6GEYJ334V	1/10W 330K	R308	ERJ6GEYJ102V	1/10W 1K	R900	ERJ6GEYJ821V	1/10W 820
R111, 112	ERJ6GEYJ101V	1/10W 100	R309-311	ERJ6GEYJ472V	1/10W 4.7K	R901	ERJ6GEYJ102V	1/10W 1K
R113, 114	ERJ6GEYJ103V	1/10W 10K	R313	ERJ6GEYJ1R0V	1/10W 1.0	R902	ERJ6GEYJ122V	1/10W 1.2K
R117	ERJ6GEYJ123V	1/10W 12K	R601, 602	ERJ6GEYJ472V	1/10W 4.7K	R903	ERJ6GEYJ152V	1/10W 1.5K
R118	ERJ6GEYJ102V	1/10W 1K	R603	ERJ6GEYJ820V	1/10W 82	R904	ERJ6GEYJ182V	1/10W 1.8K
R119, 120	ERJ6GEYJ330V	1/10W 33	R605	ERD2FCVJ4R7T	1/4W 4.7 $\Delta$	R905	ERJ6GEYJ222V	1/10W 2.2K
R121, 122	ERJ6GEYJ225V	1/10W 2.2M	R607	ERD2FCVG100T	1/4W 10 $\Delta$	R906	ERJ6GEYJ332V	1/10W 3.3K
R123-126	ERJ6GEYJ104V	1/10W 100K	R608	ERJ6GEYJ100	1/10W 10	R907	ERJ6GEYJ472V	1/10W 4.7K
R127, 128	ERJ6GEYJ222V	1/10W 2.2K	R610	ERJ6GEYJ471V	1/10W 470	R908	ERJ6GEYJ682V	1/10W 6.8K
R129, 130	ERJ6GEYJ273V	1/10W 27K	R611-613	ERJ6GEYJ1R0V	1/10W 1.0	R909	ERJ6GEYJ123V	1/10W 12K
R131	ERJ6GEYJ562V	1/10W 5.6K	R614	ERJ6GEYJ102V	1/10W 1K	R910	ERJ6GEYJ223V	1/10W 22K
R132	ERJ6GEYJ104V	1/10W 100K	R615	ERJ6GEYJ332V	1/10W 3.3K	R911	ERJ6GEYJ683V	1/10W 68K
R133	ERJ6GEYJ103V	1/10W 10K	R616	ERJ6GEYJ103V	1/10W 10K	R912	ERJ6GEYJ102V	1/10W 1K
R135	ERJ6GEYJ334V	1/10W 330K	R626-629	ERJ6GEYJ1R0V	1/10W 1.0	R914	ERJ6GEYJ151V	1/10W 150
R137	ERJ6GEYJ334V	1/10W 330K	R630	ERDS2TJ1R0	1/4W 1.0	R915	ERJ6GEYJ121V	1/10W 120
R141, 142	ERJ6GEYJ103V	1/10W 10K	R631	ERJ6GEYJ181V	1/10W 180	R916	ERJ6GEYJ151V	1/10W 150
R145	ERJ6GEYJ183V	1/10W 18K	R632, 633	ERJ6GEYJ471V	1/10W 470	R917	ERJ6GEYJ121V	1/10W 120
R148, 149	ERJ6GEYJ562V	1/10W 5.6K	R634, 635	ERJ6GEYJ820V	1/10W 82	R918	ERJ6GEYJ102V	1/10W 1K
R153, 154	ERJ6GEYJ102V	1/10W 1K	R636, 637	ERJ6GEYJ181V	1/10W 180	R921, 922	ERJ6GEYJ101V	1/10W 100
R157, 158	ERJ6GEYJ223V	1/10W 22K	R638	ERJ6GEYJ102V	1/10W 1K	R924	ERJ6GEYJ821V	1/10W 820
R159	ERJ6GEYJ104V	1/10W 100K	R701, 702	ERJ6GEYJ103V	1/10W 10K	R925	ERJ6GEYJ102V	1/10W 1K
R160	ERJ6GEYJ103V	1/10W 10K	R704	ERJ6GEYJ472V	1/10W 4.7K	R926, 927	ERJ6GEYJ473V	1/10W 47K
R165, 166	ERJ6GEYJ104V	1/10W 100K	R705	ERJ6GEYJ473V	1/10W 47K	R928	ERJ6GEYJ151V	1/10W 150
R167-169	ERJ6GEYJ222V	1/10W 2.2K	R707, 708	ERJ6GEYJ472V	1/10W 4.7K	R929	ERJ6GEYJ121V	1/10W 120
R170	ERJ6GEYJ472V	1/10W 4.7K	R709	ERJ6GEYJ101V	1/10W 100	R930	ERJ6GEYJ103V	1/10W 10K
R171	ERJ6GEYJ682V	1/10W 6.8K	R710	ERJ6GEYJ102V	1/10W 1K	R931	ERJ6GEYJ151V	1/10W 150
R172, 173	ERJ6GEYJ122V	1/10W 1.2K	R711	ERJ6GEYJ104V	1/10W 100K	R932	ERJ6GEYJ121V	1/10W 120
R174	ERJ6GEYJ103V	1/10W 10K	R712	ERJ6GEYJ683V	1/10W 68K	R933	ERJ6GEYJ103V	1/10W 10K
R176	ERJ6GEYJ392V	1/10W 3.9K	R715	ERJ6GEYJ472V	1/10W 4.7K	R971	ERDS2TJ221	1/4W 220
R177	ERJ6GEYJ273V	1/10W 27K	R718	ERJ6GEYJ683V	1/10W 68K	R973, 974	ERDS2TJ393	1/4W 39K
R178, 179	ERJ6GEYJ334V	1/10W 330K	R721	ERJ6GEYJ103V	1/10W 10K			
R207, 208	ERJ6GEYJ104V	1/10W 100K	R722, 723	ERJ6GEYJ102V	1/10W 1K			CHIP JUMPER(S)
R209, 210	ERJ6GEYJ102V	1/10W 1K	R727-729	ERJ6GEYJ472V	1/10W 4.7K			
R213, 214	ERJ6GEYJ332V	1/10W 3.3K	R736	ERJ6GEYJ103V	1/10W 10K	RJ1-38	ERJ6GEY0R00V	CHIP JUMPER
R215, 216	ERJ6GEYJ123V	1/10W 12K	R738	ERJ6GEYJ102V	1/10W 1K			
R217, 218	ERJ6GEYJ222V	1/10W 2.2K	R739	ERJ6GEYJ272V	1/10W 2.7K			CAPACITORS
R219	ERJ6GEYJ433V	1/10W 43K	R740	ERJ6GEYJ473V	1/10W 47K			
R220	ERJ6GEYJ220	1/10W 22	R741	ERJ6GEYJ123V	1/10W 12K	C101, 102	ECUV1H221KBN	50V 220P
R221, 222	ERJ6GEYJ221V	1/10W 220	R742	ERJ6GEYJ103V	1/10W 10K	C105, 106	ECEA1EKA4R7B	25V 4.7U
R223	ERJ6GEYJ220	1/10W 22	R743, 744	ERJ6GEYJ102V	1/10W 1K	C107, 108	ECEA0JKA470B	6.3V 47U
R230	ERJ6GEYJ103V	1/10W 10K	R745, 746	ERJ6GEYJ103V	1/10W 10K	C109, 110	ECUV1H561KBN	50V 560P
R231	ERJ6GEYJ334V	1/10W 330K	R748	ERJ6GEYJ103V	1/10W 10K	C111, 112	ECUV1E183KBN	25V 0.018U

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks			
C113, 114	ECUV1H331KBN	50V 330P	C619	ECUV1H102KBN	50V 1000P			
C115, 116	ECEA1EKA4R7B	25V 4. 7U	C701	ECUV1E104ZFN	25V 0. 1U			
C119, 120	ECEA1EKA4R7B	25V 4. 7U	C702	ECEA0JKA101B	6. 3V 100U			
C121	ECEA1HKAR33B	50V 0. 33U	C705	ECUV1H103KBN	50V 0. 01U			
C122	ECUV1E223KBN	25V 0. 022U	C706	ECST0JY335RR	6. 3V 3. 3U			
C123	ECUV1E153KBN	25V 0. 015U	C707, 708	ECUV1H103KBN	50V 0. 01U			
C124	ECUV1H102KBN	50V 1000P	C712-715	ECUV1H101KCN	50V 100P			
C125	ECEA1AKA220B	10V 22U	C810	ECUV1E104ZFN	25V 0. 1U			
C126	RCE1AKA101BG	10V 100U	C811	ECEA1EKA470B	25V 47U			
C127	RCE1CKA100BG	16V 10U	C812	ECUV1H101KCN	50V 100P			
C128	ECEA0JKA470B	6. 3V 47U	C813	RCE1AKA101BG	10V 100U			
C130-132	ECUV1H331KBN	50V 330P	C814, 815	ECUV1H101KCN	50V 100P			
C133	ECEA1HKA010B	50V 1U	C816	ECUV1E104ZFN	25V 0. 1U			
C134	RCE1HKA3R3BG	50V 3. 3U	C819	ECST1AX106RR	10V 10U			
C141	ECUV1H471KBN	50V 470P	C901	ECUV1H101KCN	50V 100P			
C144	ECUV1H471KBN	50V 470P	C902	ECUV1E104ZFN	25V 0. 1U			
C145, 146	ECUV1H332KBN	50V 3300P	C903	ECUV1H101KCN	50V 100P			
C150	ECUV1E104ZFN	25V 0. 1U	C912-917	ECUV1H101KCN	50V 100P			
C203, 204	ECEA1EKA4R7B	25V 4. 7U						
C205, 206	ECEA1HKA010B	50V 1U						
C207, 208	ECUV1H820JCN	50V 82P						
C211, 212	ECUV1H152KBN	50V 1500P						
C213, 214	ECEA1EKA4R7B	25V 4. 7U						
C215, 216	RCE1CKA100BG	16V 10U						
C217, 218	ECEA1HKAR68B	50V 0. 68U						
C219	ECEA1CKA101B	16V 100U						
C220	ECA1AM471B	10V 470U						
C221, 222	ECEA1HKAR68B	50V 0. 68U						
C223	RCE1CKA100BG	16V 10U						
C239, 240	ECUV1H681KBN	50V 680P						
C303	ECQP2E472JZT	250V 4700P						
C304	RCE1AKA101BG	10V 100U						
C305	ECEA1HKA0R1B	50V 0. 1U						
C306	ECQB1H393JF3	50V 0. 039U						
C307	ECUV1H102KBN	50V 1000P						
C308	ECUV1H332KBN	50V 3300P						
C309	ECEA0JKA470B	6. 3V 47U						
C310, 311	ECUV1H103KBN	50V 0. 01U						
C312	ECEA1HKN2R2B	50V 2. 2U						
C323	ECUV1H102KBN	50V 1000P						
C601, 602	ECUV1E104ZFN	25V 0. 1U						
C603	ECA1EM222E	25V 2200U $\Delta$						
C604	ECA1EM102B	25V 1000U $\Delta$						
C606	ECUV1E104ZFN	25V 0. 1U						
C607	ECA1AM471B	10V 470U						
C608	RCE1AKA101BG	10V 100U						
C609	ECUV1H103KBN	50V 0. 01U						
C611	ECEA1HKA010B	50V 1U						
C613	RCE1AKA470BG	10V 47U						
C614, 615	ECUV1H103KBN	50V 0. 01U						
C616, 617	ECUV1H102KBN	50V 1000P						
C618	RCE1CKA100BG	16V 10U						

# REPLACEMENT PARTS LIST

**Notes:** \* Important safety notice:

 Components identified by  $\Delta$  mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)		D802	MA188TA	DIODE	
				D901	SLR-305VC	L. E. D.	
				D904	MA110TX	DIODE	
IC101	A1898QT6	R/P EQ AMP		D905	SPR-305MDTF	L. E. D.	
IC103	BA7755AF	R/P SELECT		D906	MA110TX	DIODE	
IC201	CXA1102M-T4	DOLBY NR		D907	SPR-305MDTF	L. E. D.	
IC701	M37471M4264F	MICRO COMPUTER		D908, 909	SLR-305VC	L. E. D.	
IC802	BA6265AFP-E1	MECHANISM CONTROL		D910, 911	MA110TX	DIODE	
IC901	BU2040F-T2	LED DRIVE		D971	RVD1SS133TA	DIODE	
IC971, 972	RVSGP2S24BC	PHOTO INTERRUPTER					
		TRANSISTOR(S)				VARIABLE RESISTOR(S)	
Q101-106	2SJ163PQRTX	TRANSISTOR		VR102	EVNDXAA00B24	P. B. GAIN ADJ. (L)	
Q107	DTA114EUT107	TRANSISTOR		VR103	EVNDXAA00B24	P. B. GAIN ADJ. (R)	
Q111	2SD601QRSTX	TRANSISTOR		VR803	EVNDXAA00B53	TAPE SPEED ADJ.	
Q112	DTA114EUT107	TRANSISTOR					
Q113, 114	2SD1328QRSTX	TRANSISTOR				COIL(S)	
Q201, 202	2SJ163PQRTX	TRANSISTOR		L201, 202	SLQX303-1KT	COIL	
Q301	2SD601QRSTX	TRANSISTOR		L301	RL08C006M-T	COIL	
Q302	2SD1328QRSTX	TRANSISTOR		L302	RLQZB470KT-D	COIL	
Q303, 304	2SD874QRSTX	TRANSISTOR		L701	RLQA100JT-Y	COIL	
Q305, 306	DTC144EUT107	TRANSISTOR		L702	RLQZP1R0KT-Y	COIL	
Q601-605	2SD2137PQTA	TRANSISTOR	$\Delta$	L901	RLQA100JT-Y	COIL	
Q606	2SD601QRSTX	TRANSISTOR					
Q607	2SD2137PQTA	TRANSISTOR	$\Delta$			OSCILLATOR(S)	
Q609	2SD2137PQTA	TRANSISTOR	$\Delta$				
Q701-703	2SD601QRSTX	TRANSISTOR		X701	EF0EC8004T4	OSCILLATOR (8MHz)	
Q706	UN5214TX	TRANSISTOR					
Q804	2SD1328QRSTX	TRANSISTOR				COMPONENT COMBINATION(S)	
Q901, 902	DTA114EUT107	TRANSISTOR					
Q903, 904	2SB709QRSTX	TRANSISTOR		Z971	EXBF6L306SYV	COMPONENT COMBINATION	
		DIODE(S)				SWITCH(ES)	
D201	MA110TX	DIODE		S803	RSH1A024-U	OPEN DET.	
D301	MA110TX	DIODE		S804	RSH1A024-U	CLOSE DET.	
D603-606	RL1N4003N02	DIODE	$\Delta$	S900	EVQ21405R	STOP	
D609	MA723TA	DIODE		S901	EVQ21405R	DOLBY NR	
D610	MTZJ10BTA	DIODE	$\Delta$	S902	EVQ21405R	REW (TPS)	
D611	MTZJ8R2CTA	DIODE	$\Delta$	S903	EVQ21405R	R. PLAY	
D612	MTZJ5R6BTA	DIODE	$\Delta$	S904	EVQ21405R	TPS. SKIP	
D613	MA723TA	DIODE		S905	EVQ21405R	F. PLAY	
D614, 615	MA110TX	DIODE	$\Delta$	S906	EVQ21405R	F. F. (TPS)	
D705, 706	MA110TX	DIODE		S909	EVQ21405R	REC PAUSE	
D707	MTZJ5R1BTA	DIODE	$\Delta$	S910	EVQ21405R	OPEN/CLOSE	
D708	MA110TX	DIODE		S911	EVQ21405R	DISPLAY (COUNTER)	

[illegible]